



# The U.S. Automobile Industry: What Lies Ahead?

**Sean P. McAlinden, Ph.D.**  
**Vice President for Research and Chief Economist**  
**Center for Automotive Research (CAR)**

# The Center for Automotive Research

- An independent non-profit research organization
  - Don't pick winners or losers
- A corporate, public sector, and academic interface
- Funded by:
  - Private companies and organizations (contract research)
  - Public entities (federal, state & local governments), and
  - Foundations
- Focused on future trends

# Today

The Great Lakes region is losing automotive jobs at a feverish clip.

Projections from the Detroit 3 automakers and upper tier suppliers indicate that the next 2 years are a critical time period for acting to:

- Consolidate the remaining jobs in the region,
- Pursue re-investment, and
- Attract new investment to the region.

## The Consequences of Inaction

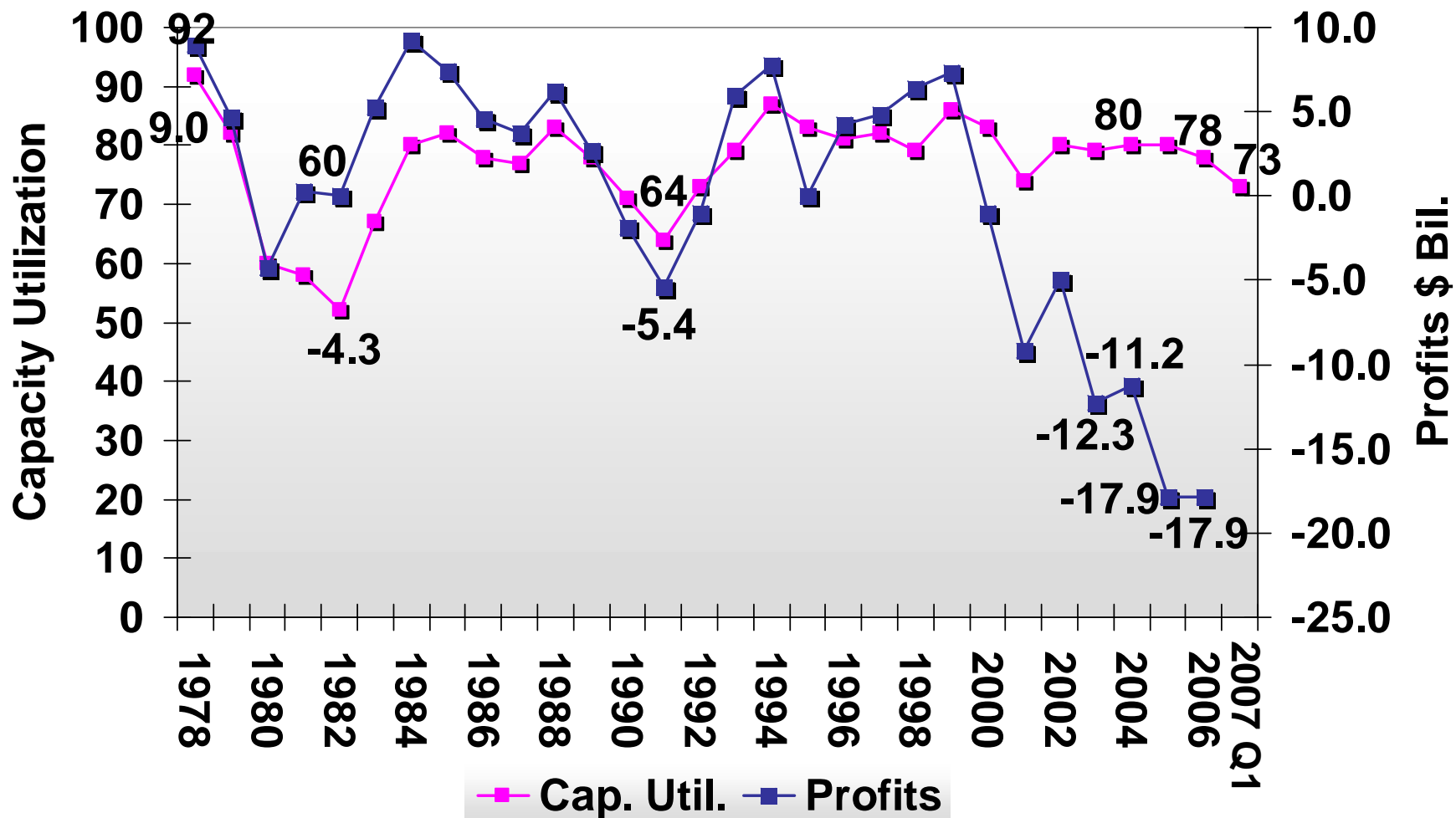
- Loss of tens of thousands MORE jobs
- Loss of a 100-year investment in physical infrastructure and human capital
- Loss of the region's innovation engine

*Automotive is what this region does best –  
better than anywhere else in the world!*

# The Situation is Grim

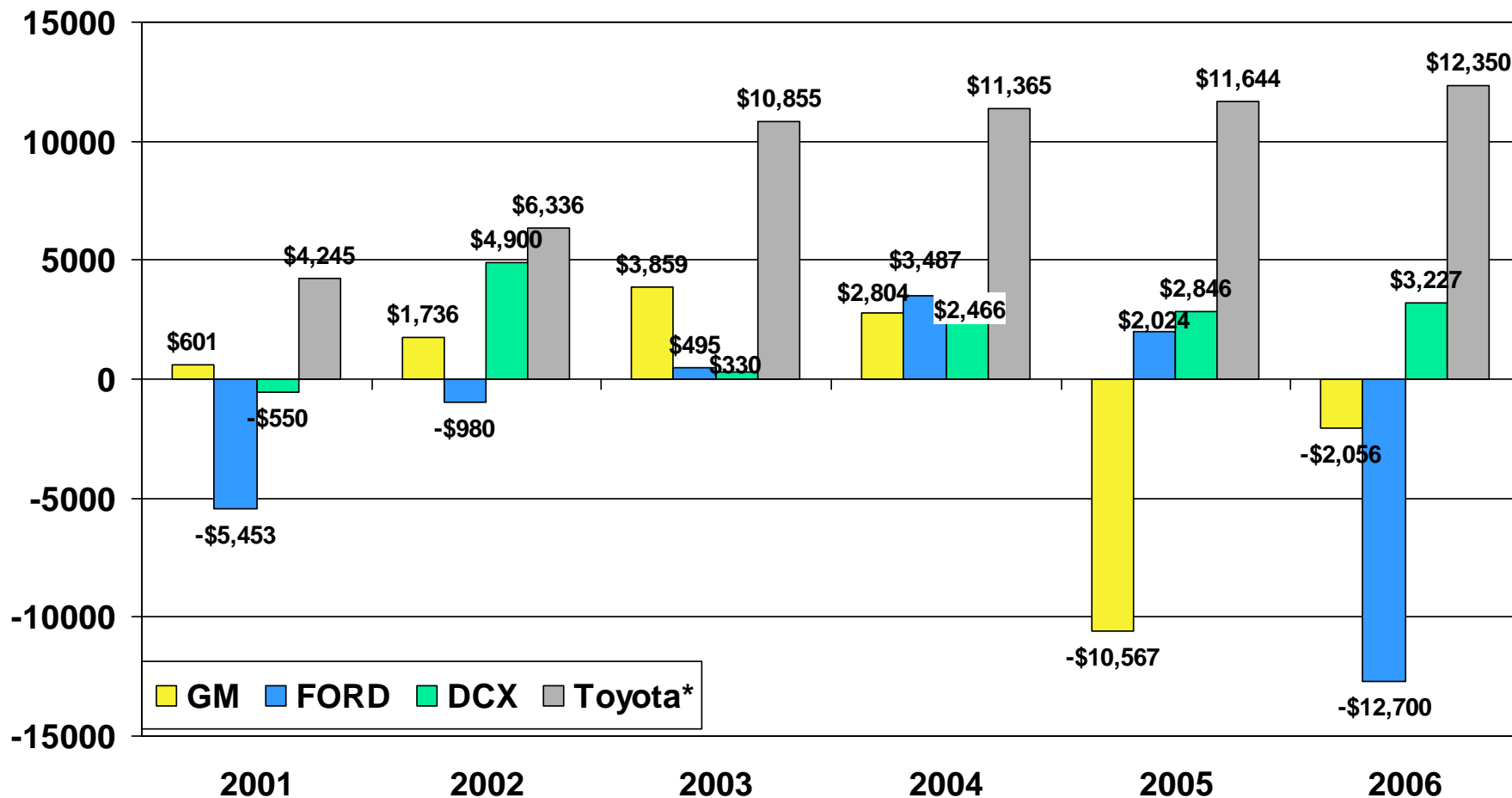
## Over \$60 Billion in Losses Since 2000!

U.S. Automotive  
Capacity Utilization and Profits  
1978 – 2006



# Net Earnings

Includes All Special Items



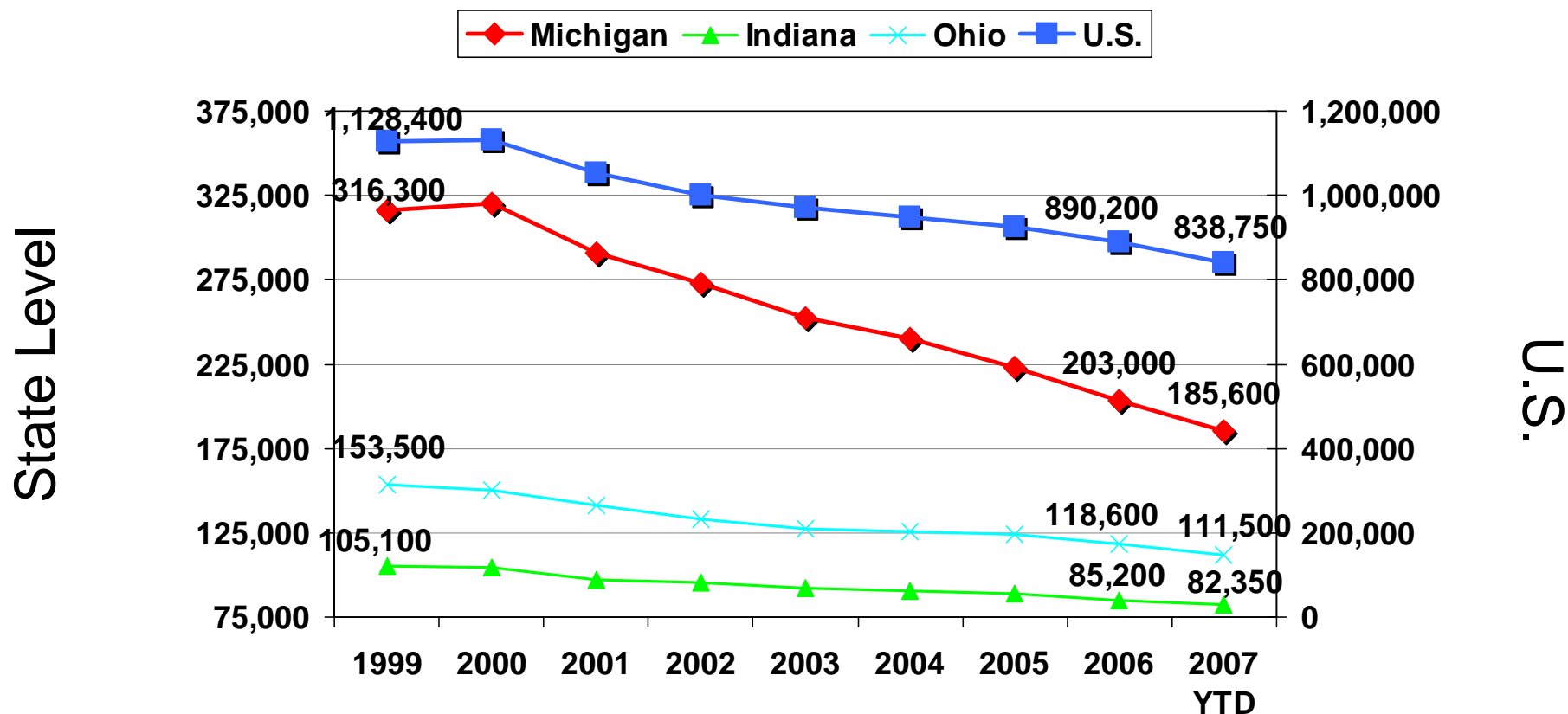
Source: The Companies

\*For Toyota years are fiscal years.

\*For Toyota 2006 is earnings through February 2007.

# The Darkest Part of the Tunnel . . .

## Motor Vehicle & Parts Manufacturing Employment 1999-2007 YTD

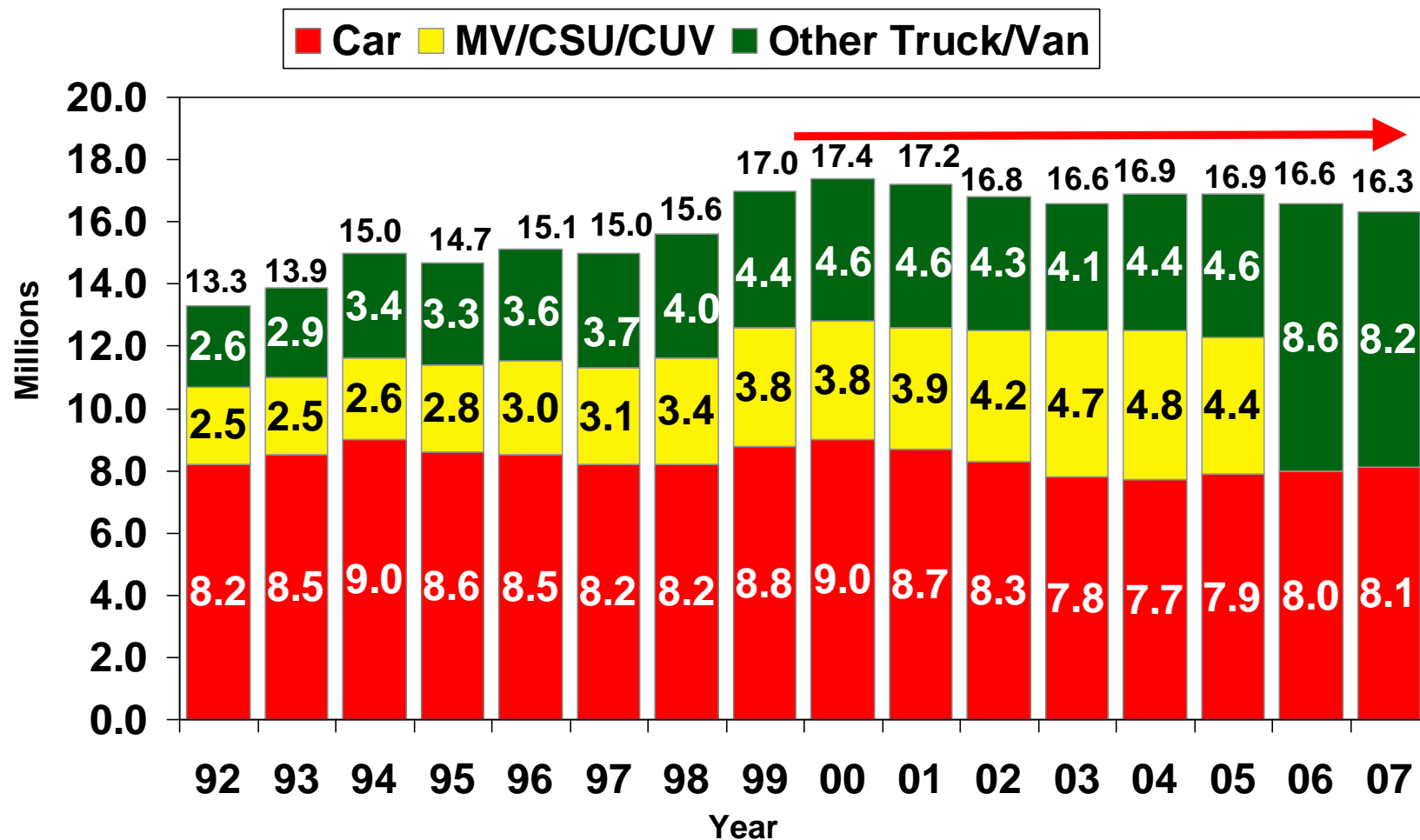


Source: BLS

US: March 2007, State: February 2007

# Stuck on a Plateau or Worse!

## Total U.S. Sales of Light Vehicles: 1992 - 2007

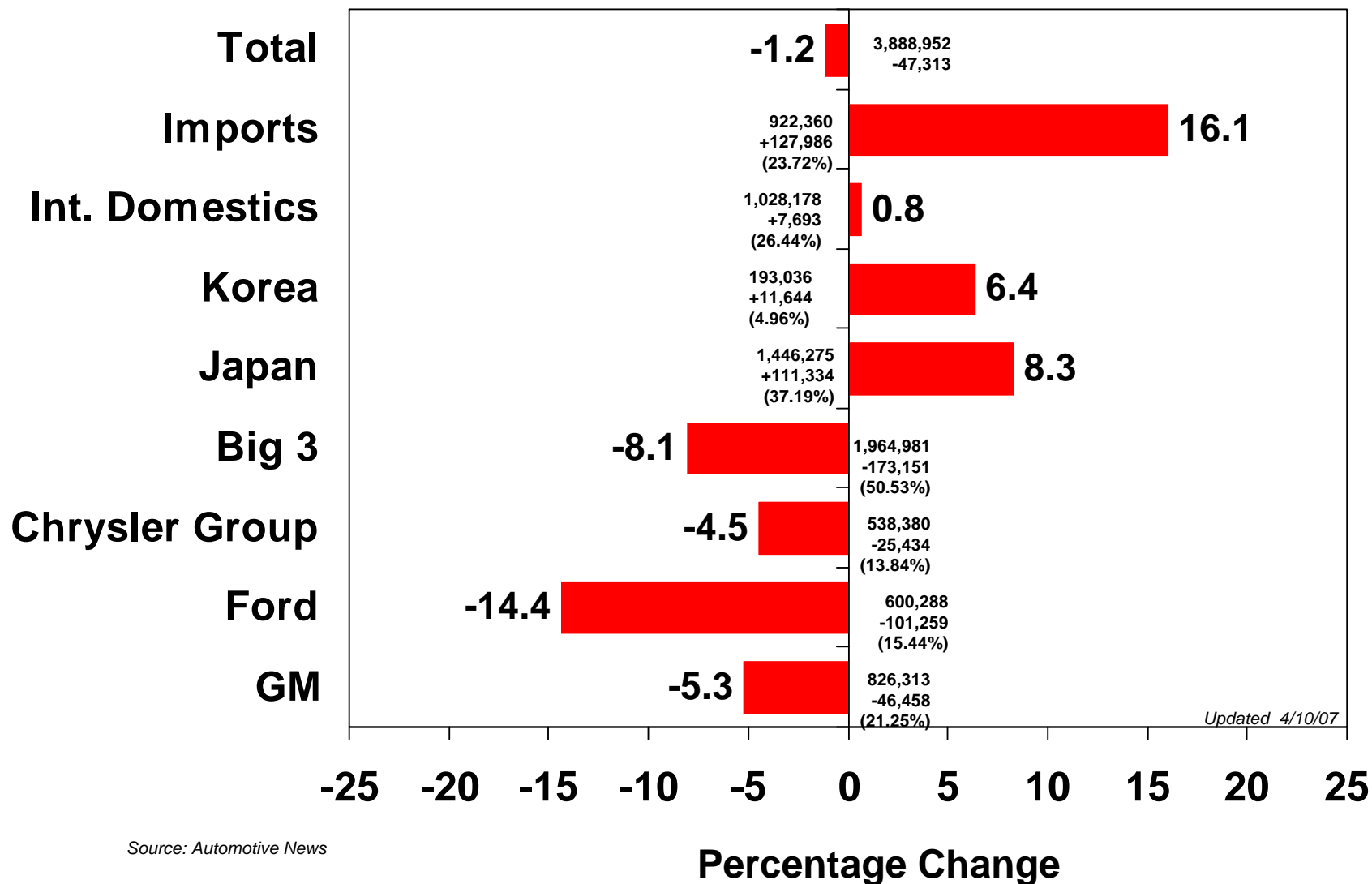




## **Stagnant Growth in U.S. Auto**

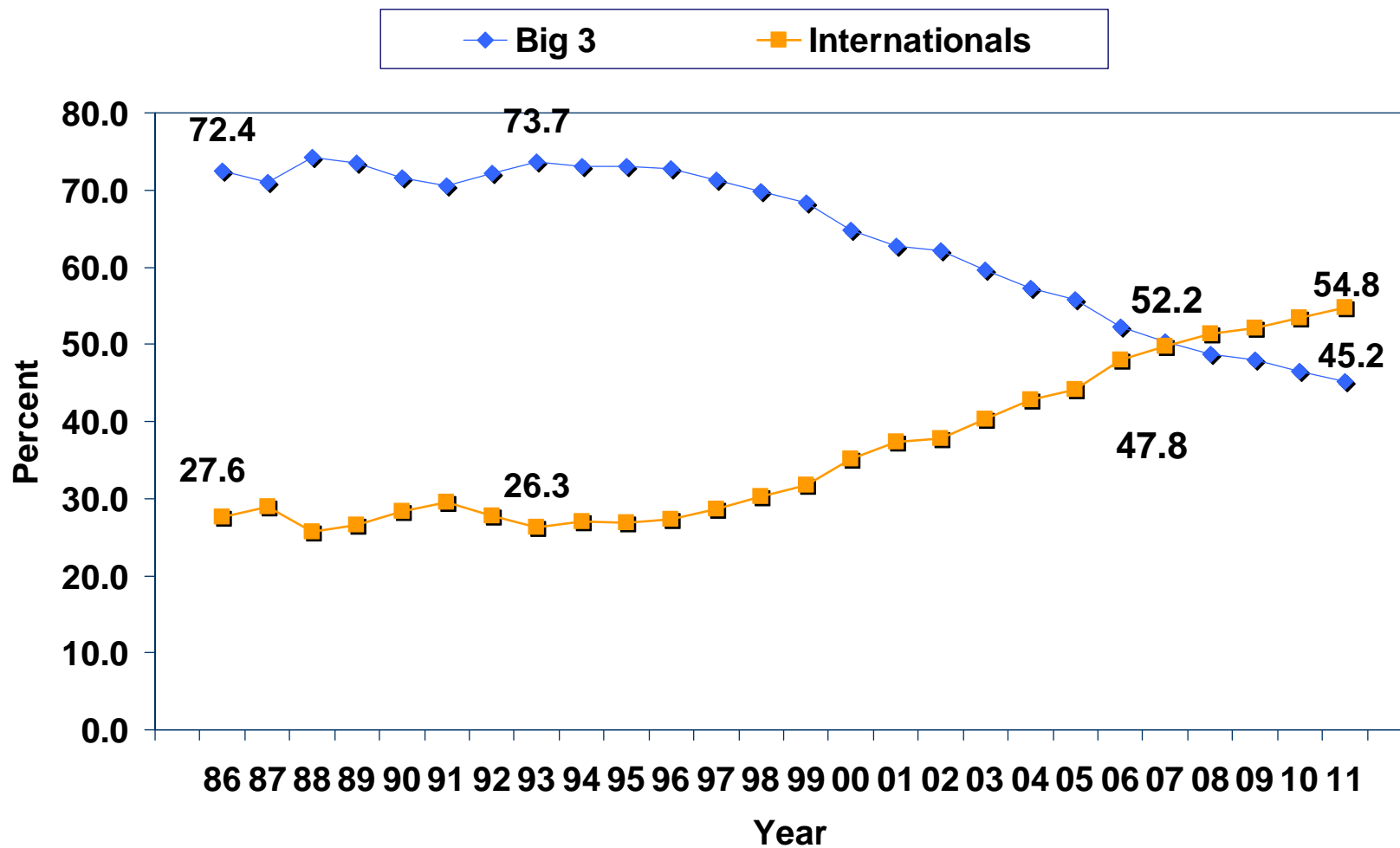
- **No growth U.S. market has resulted in vicious price competition. No rising tide to lift all boats.**
- **Vehicle makers and suppliers have cut prices (for years) – now labor . . .**
- **If 07' GDP growth below 2.5% - then sales will fall fast. Scrappage rates are very low. Falling housing prices may have large negative wealth effect. Fuel and other operating costs at record highs. Interest rates high.**
- **And we have fewer buyers in the market . . . Due to demographics. Baby Boomers pulling out? Gen X too small. Gen Y not in market yet.**
- **Utilization now at 78% . . . Do we need a recession to clean out the dead wood?**

# Percentage Change in U.S. Sales of Light Vehicles: Sales Thru March 2007 vs. March 2006



# Down Below 50% Detroit 3 U.S. Market Share\*

1986 – 2011



\* Detroit 3 North American "owned" production.

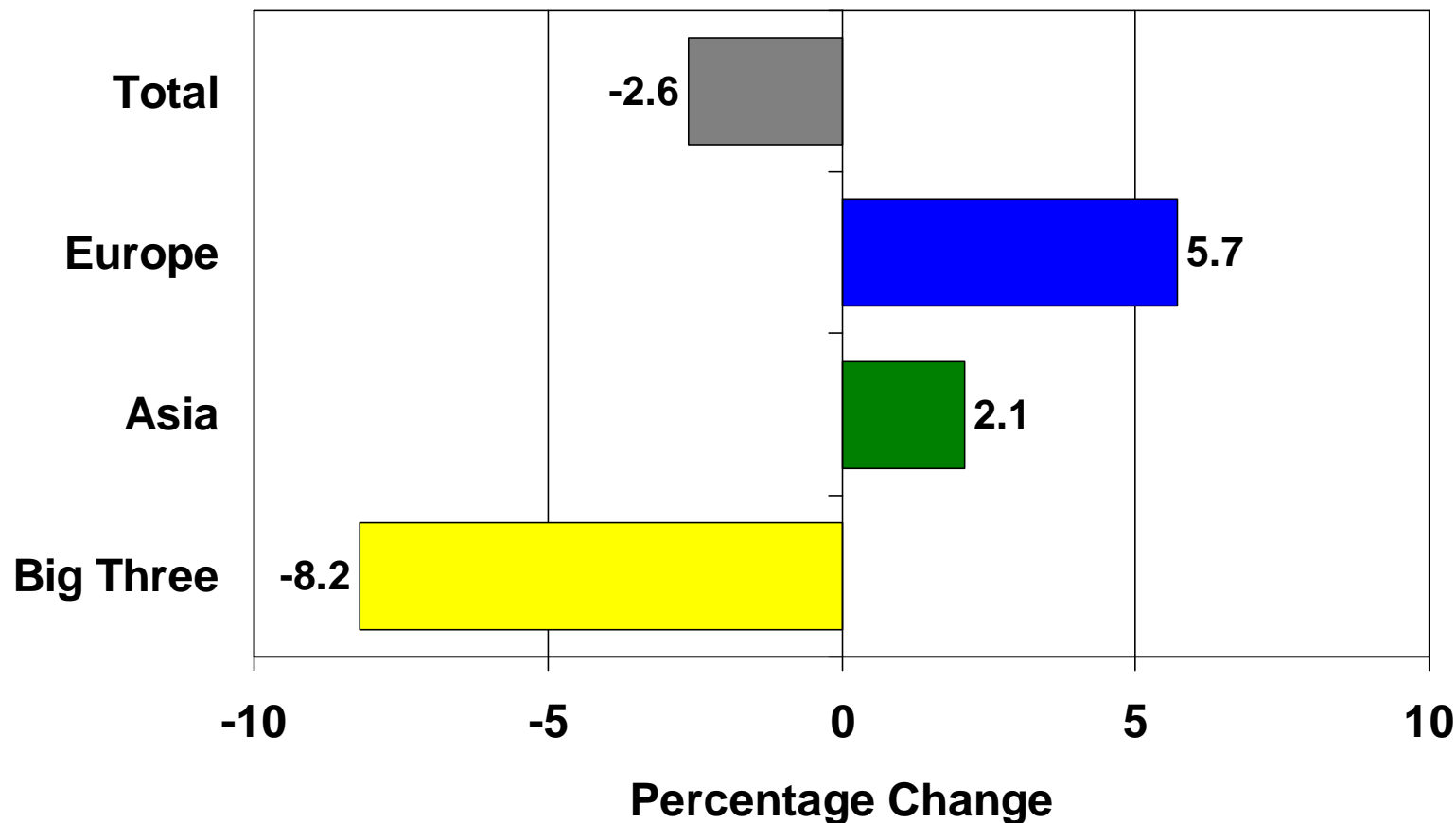
## Why are the Detroit 3 Losing Share in their “Home” Market?

- Too many sales and too much capacity in light truck segments:
- GM = 57%, Ford = 63%, Chrysler = 69%, Market = 51.0%
- Over-reliance on car “fleet” sales (over 35%) and employee sales (5-10%). Reduces residuals and resale.
- Product models are older and product development is slower.
- Quality has “almost” caught up to best of Japanese but has not caught them yet. The Koreans have . . .
- Technology to design & build modern vehicles has diffused. No technical barriers. Koreans have caught up, and now . . .?
- Huge legacy costs connected to labor and dealerships reduce internal capital needed to catch up in product. \$5,500 per-unit revenue gap with Toyota/Honda for Ford and Chrysler. GM will drop to \$3,000 gap soon.

# Continental Breakdown - U.S. LV Sales

## YOY % Change

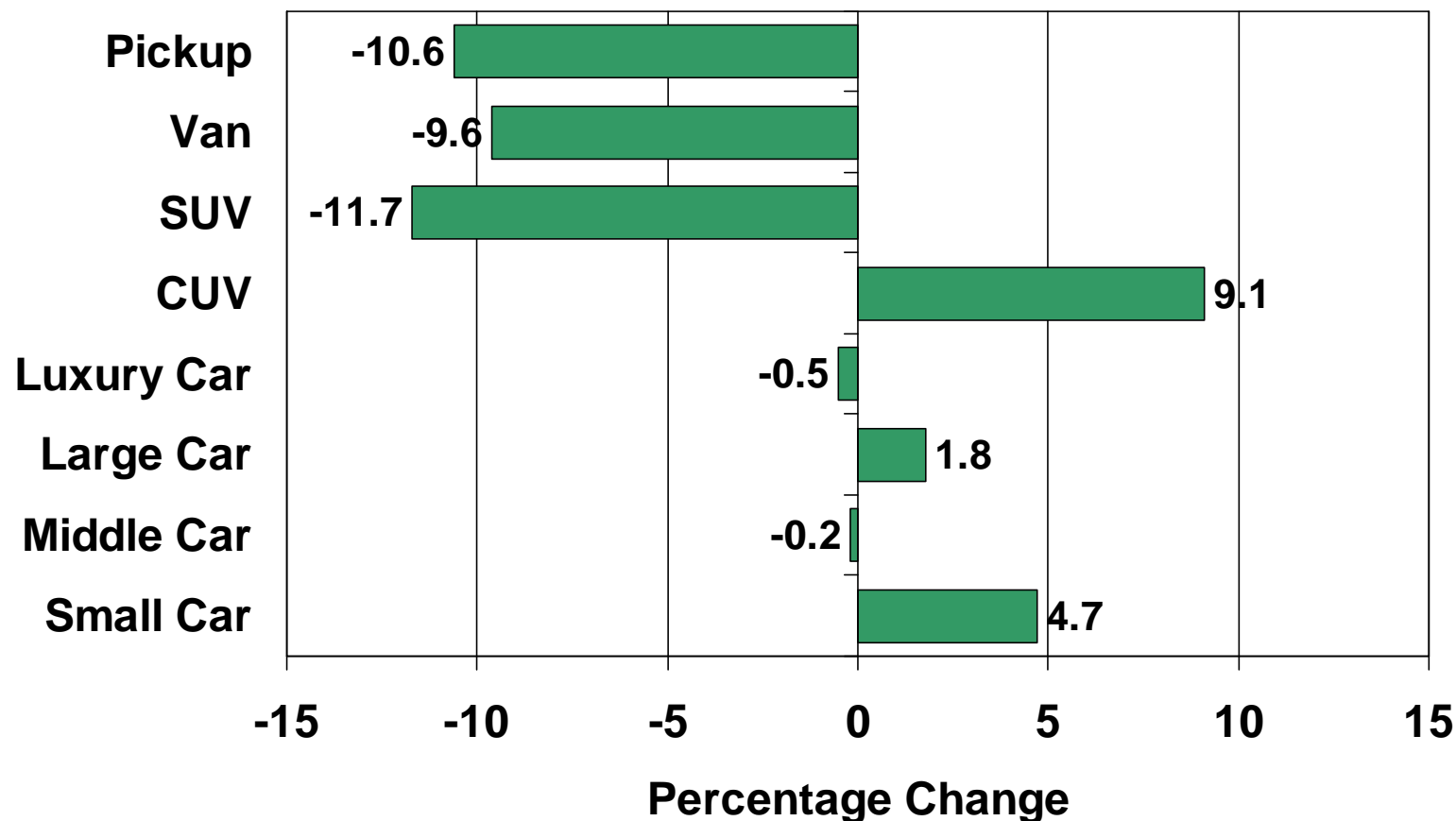
### 2006 Calendar Year



# Segment Breakdown - U.S. LV Sales

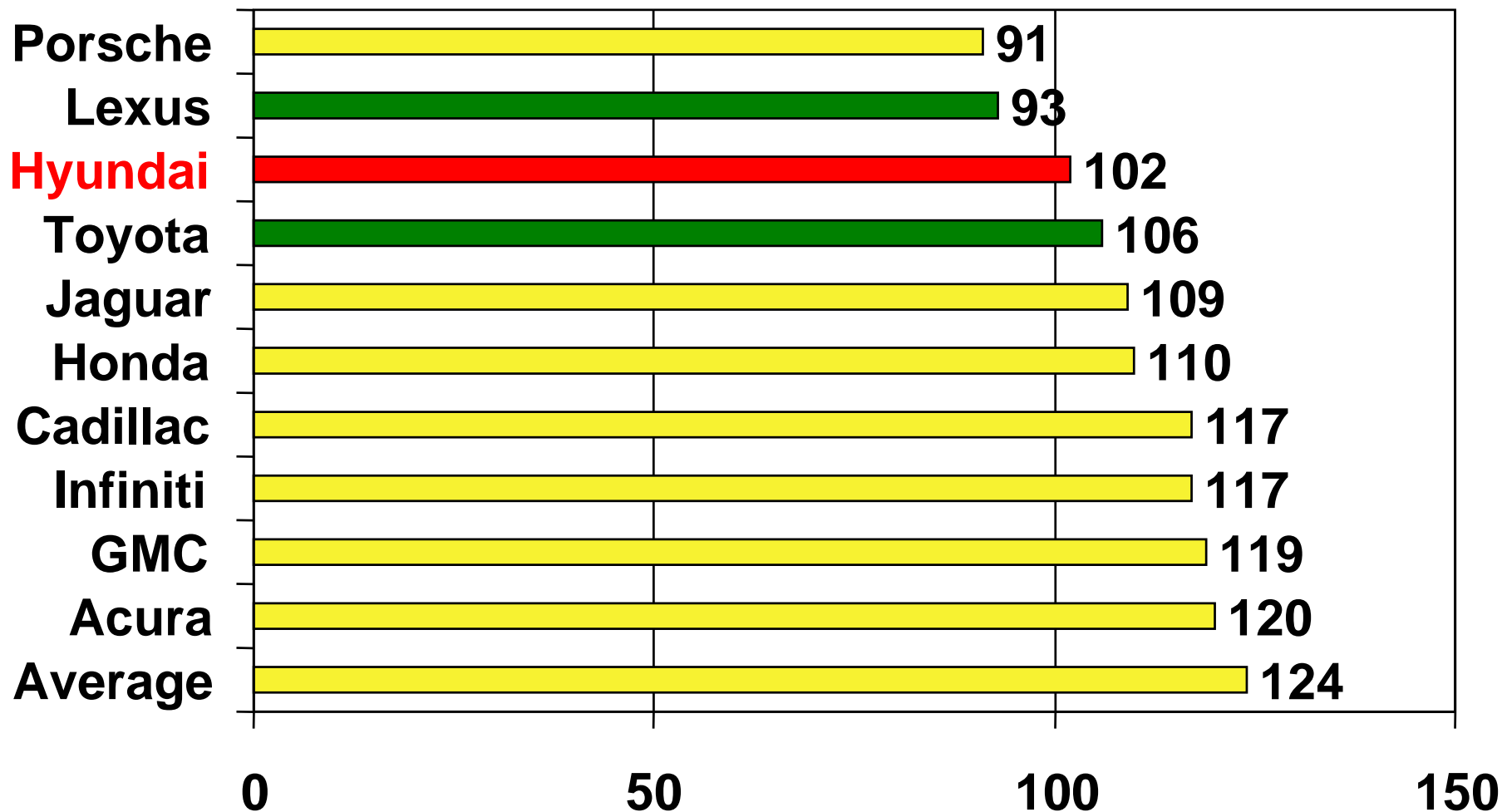
## YOY % Change

### 2006 Calendar Year



# 2006 J.D. Power Initial Quality Study (IQS)

(Nameplate Ranking)



## Average Showroom Age Trend *OEMs replacing models faster*



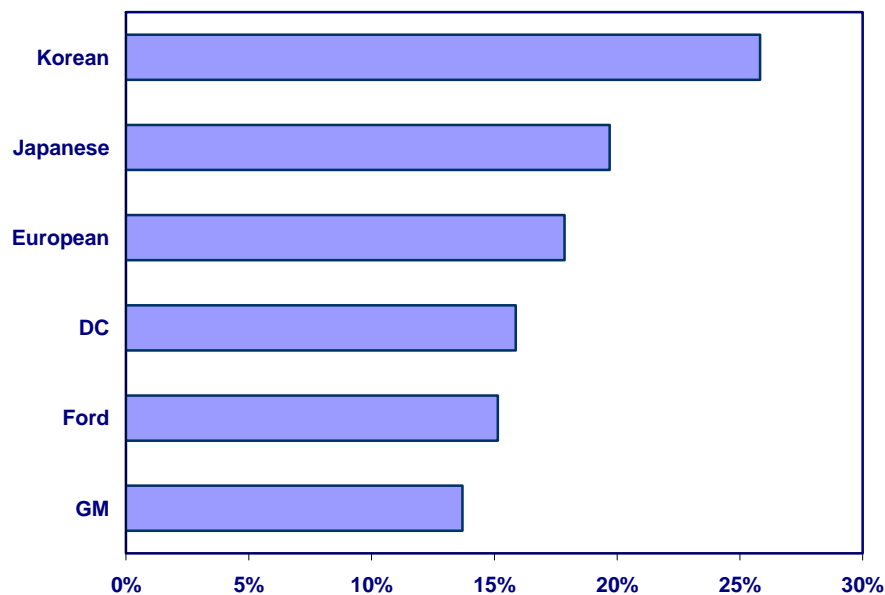
Source: Merrill Lynch



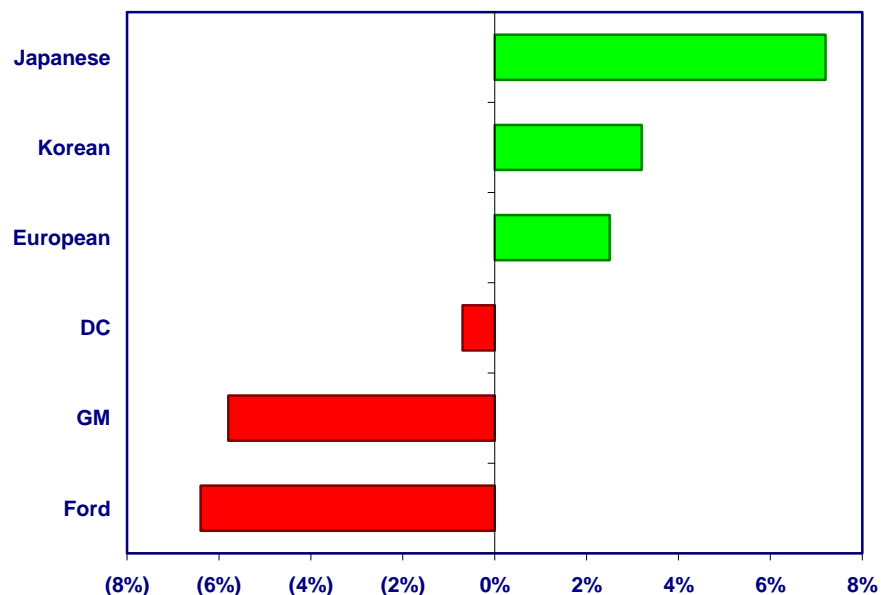
# Replacement Rates, Showroom Age & Share Trends

*Product flow & market share are correlated*

% Sales Replaced Annually, 1995-2005



Market Share Point Change, 1995-2005

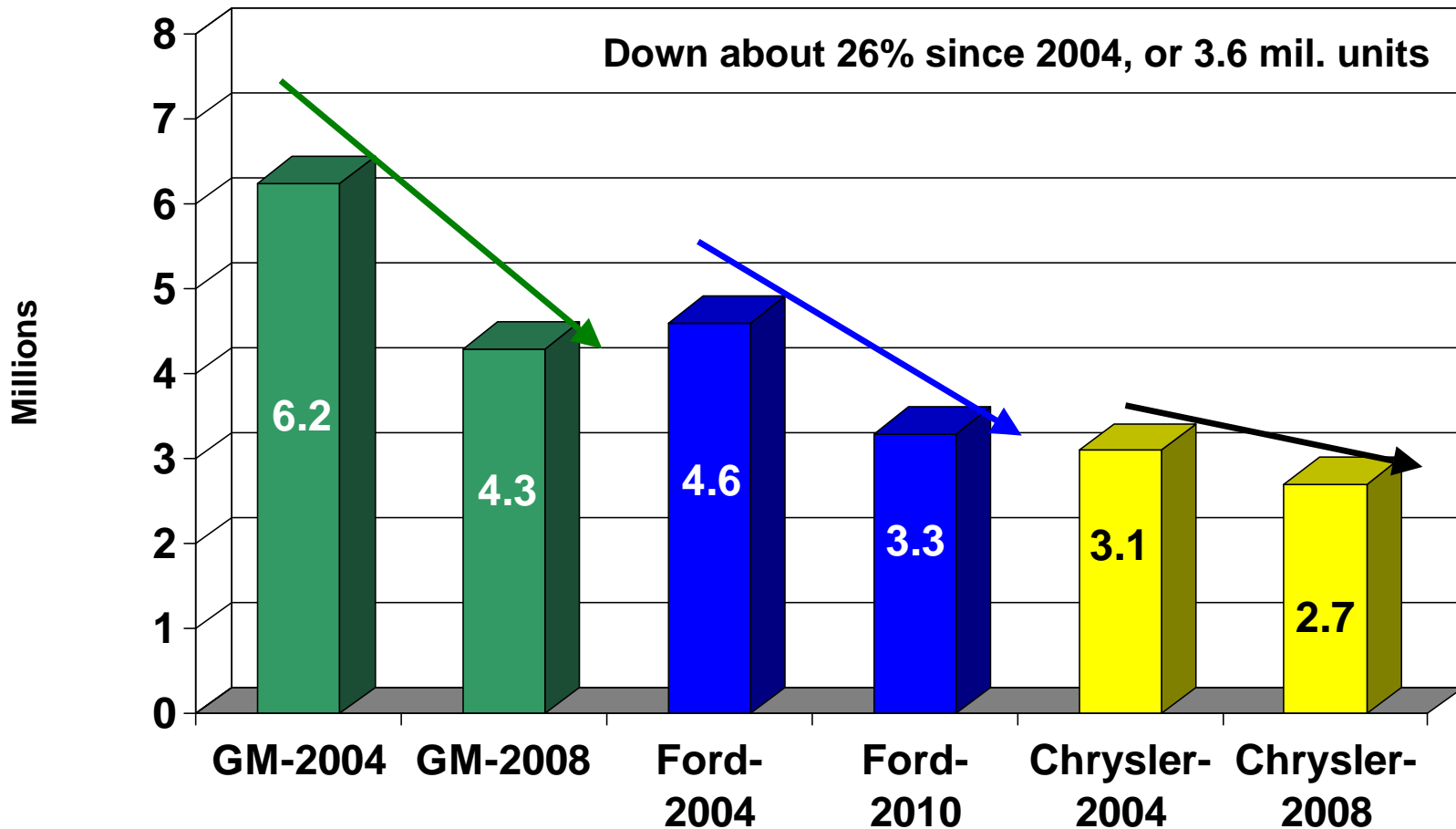


Source: Merrill Lynch

So . . .

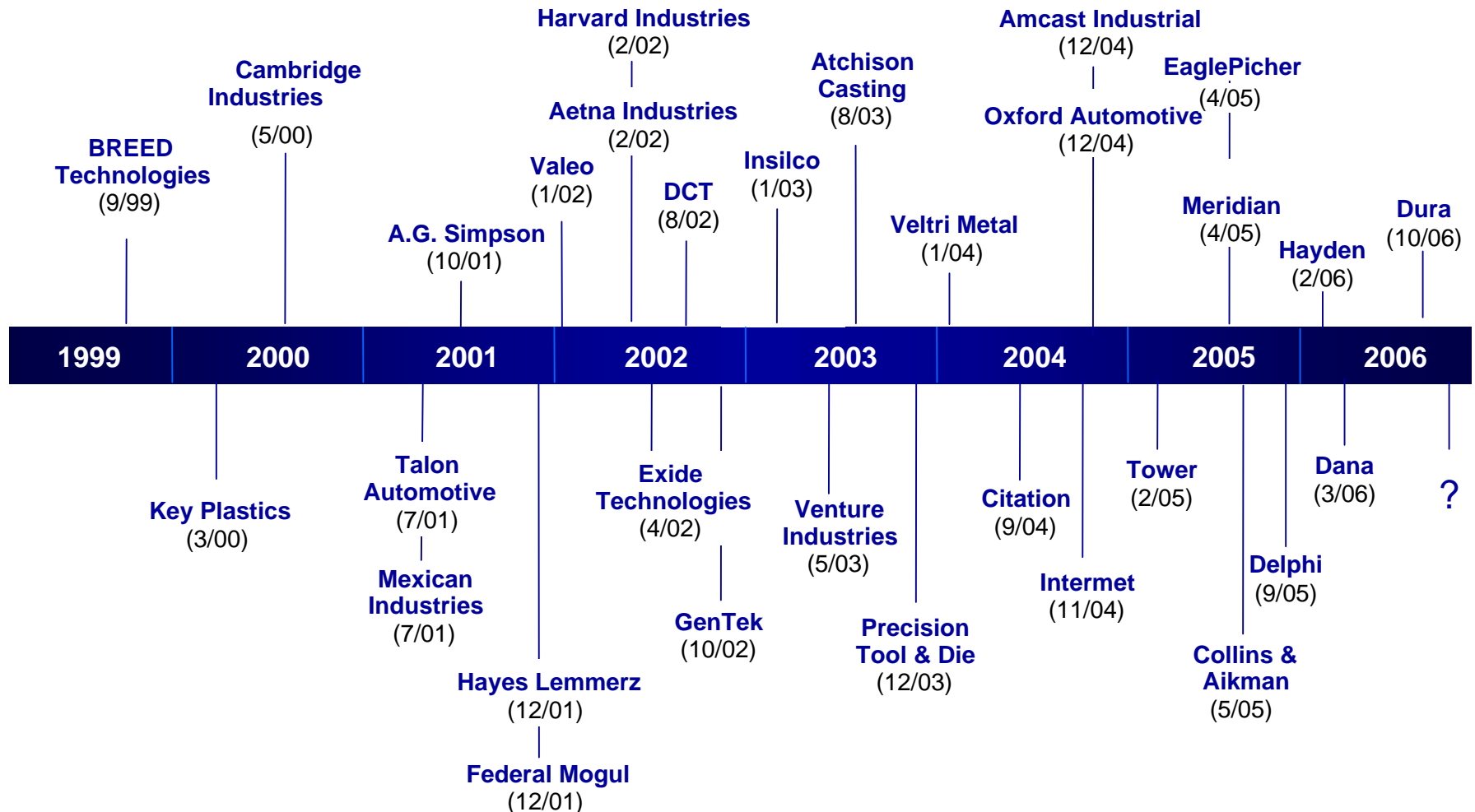
**GM will be the size of Ford, and Ford the size of Chrysler  
and Chrysler will be even smaller . . .**

**2004-2010 Change in North American  
Vehicle Production Capacity**



# Major Supplier Bankruptcies . . .

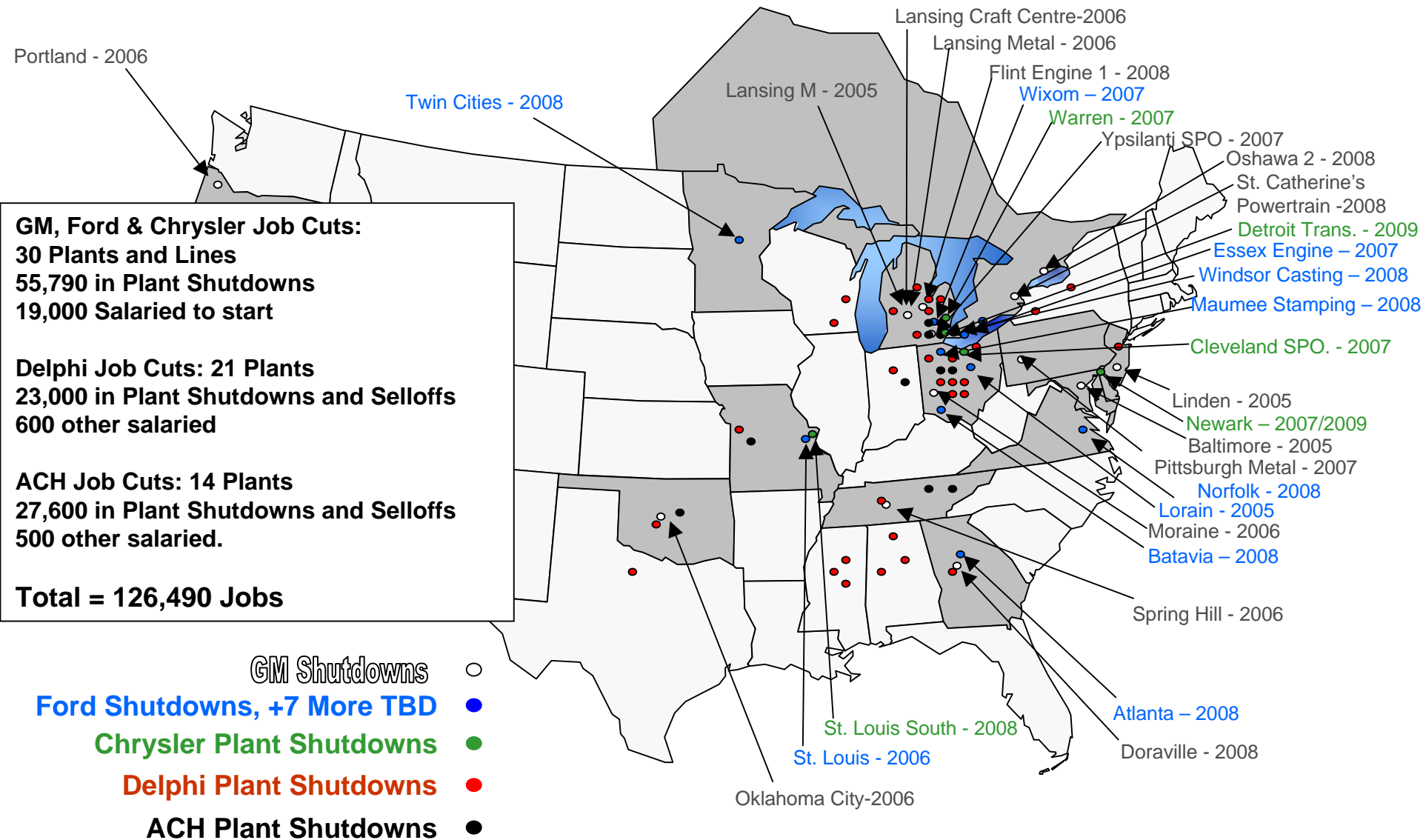
## the largest, Delphi, and other large ones, Dana, Dura . . .



# GM, Ford, Chrysler, Delphi & ACH

## U.S. and Canadian Plant Shutdowns and Line Trimmings

### Announced and Executed, 2005-2009



# Michigan Announced and Executed Sales/Closures 2005-2010

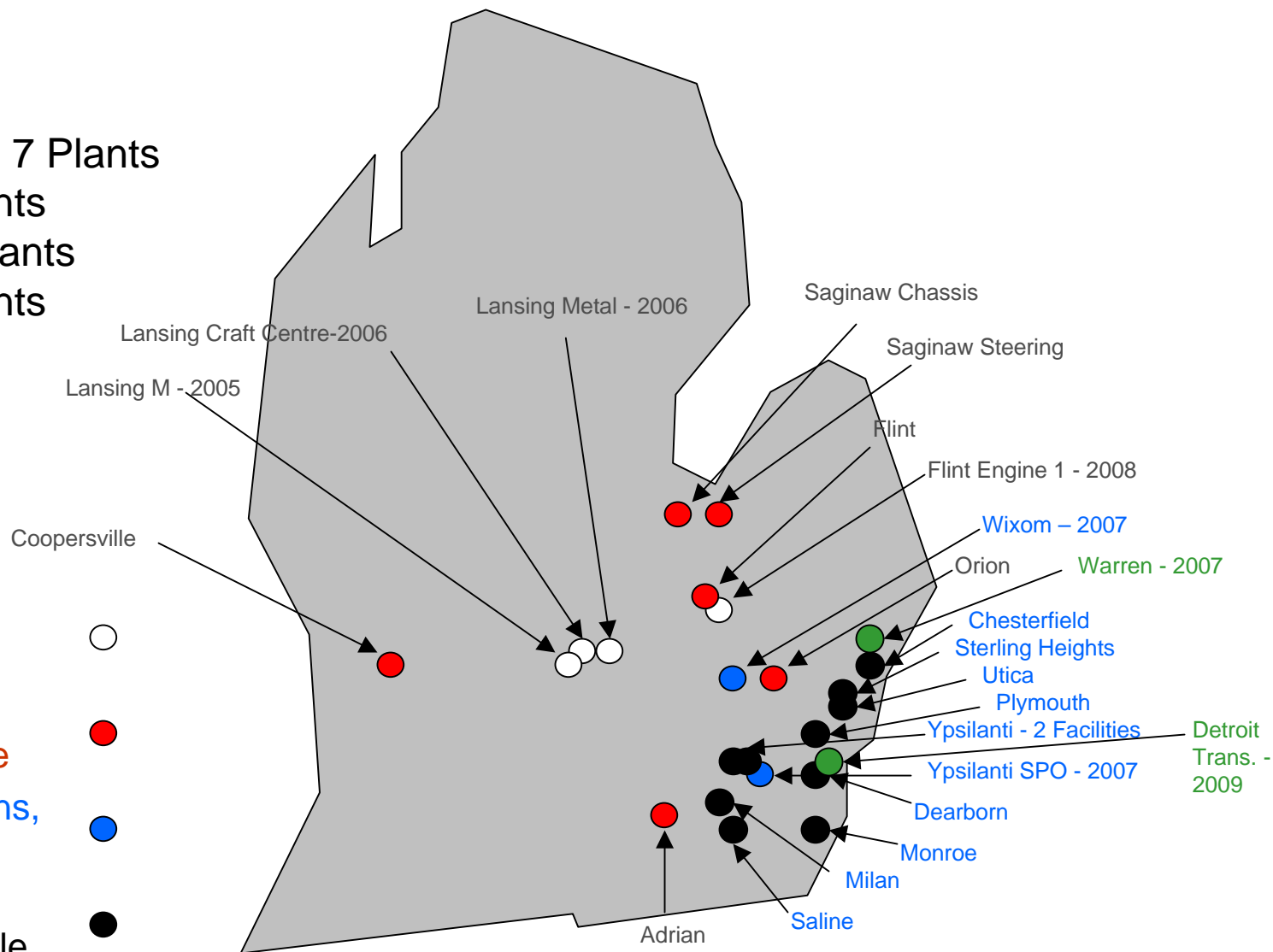
GM & Ford = 7 Plants  
DCX = 2 Plants  
Delphi = 6 Plants  
ACH = 9 Plants

GM Shutdowns

Delphi Plant  
Shutdown/Sale

Ford Shutdowns,  
+7 More TBD

ACH Plant  
Shutdowns/Sale



# The Situation

- Gloom and doom persist—negative image in press, pervasive locally
- Communities need to understand:
  - Industry is restructuring due to changing market shares and global competition
  - Industry in transition—NOT DYING—doubling in size globally!
  - This region is a viable place to conduct automotive business
  - The region must attract more capital—domestic and foreign direct investment
  - A coalition of communities from across the entire region attracts more attention and investment opportunities

# The Automotive Communities Program

- Based in the Central Automotive Region of North America
- Program is beginning its SIXTH YEAR of assisting communities
- A joint industry-community information outreach and conference program
- Top Five US Vehicle Firms and 15 Largest Suppliers (including: GM, Ford, DCX, Honda, Toyota, Denso, Delphi, JCI, and others)
- Only program of its kind bringing more than 30 communities and auto companies together to address common issues related to the ever-changing automotive industry

# The Automotive Communities

**Indiana Economic Development Corporation**  
**South Central Indiana Economic Development Group**  
 Allen County, Indiana  
 Ft Wayne, Indiana  
 Indianapolis, Indiana  
 Marion, Indiana  
 Mishawaka, Indiana  
 Muncie, Indiana  
 Perry County, Indiana  
 South Bend, Indiana  
 St Joseph County, Indiana

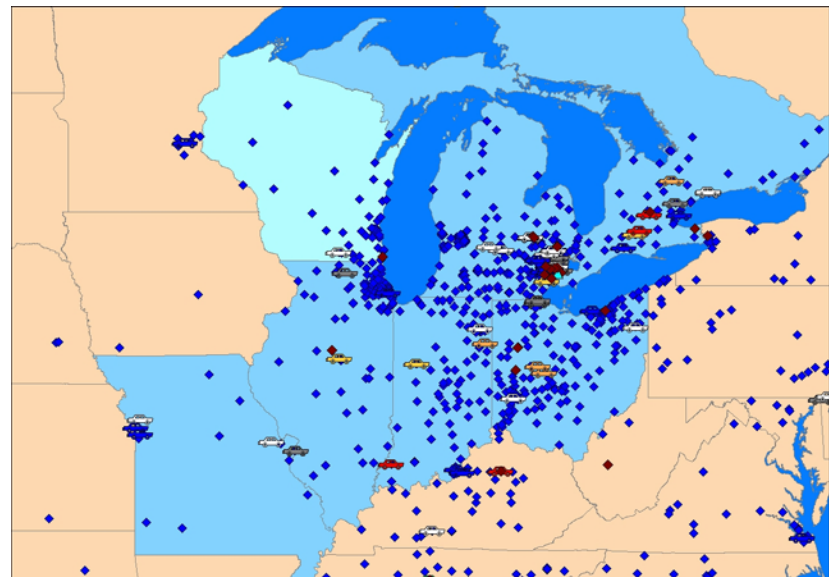
**Missouri Department of Economic Development**  
 Fenton, Missouri  
 Hazelwood, Missouri  
 St. Louis, Missouri  
 Wentzville, Missouri

Normal, Illinois  
 Bloomington-Normal Illinois

**Ontario Ministry of Development and Trade**  
**Greater Toronto Marketing Alliance**  
 London, Ontario  
 Windsor-Essex  
 Canada's Technology Triangle  
 Alliston, Ontario

**Michigan Economic Development Corporation**  
 St. Clair County, Michigan  
 Flint, Michigan  
 Genesee, Michigan  
 Saginaw, Michigan  
 Grand Rapids, Michigan  
 Bay City, Michigan

**Ohio Department of Development**  
 Defiance County, Ohio  
 Lima, Ohio  
 Lorain County, Ohio  
 Toledo, Ohio  
 Wood County, Ohio

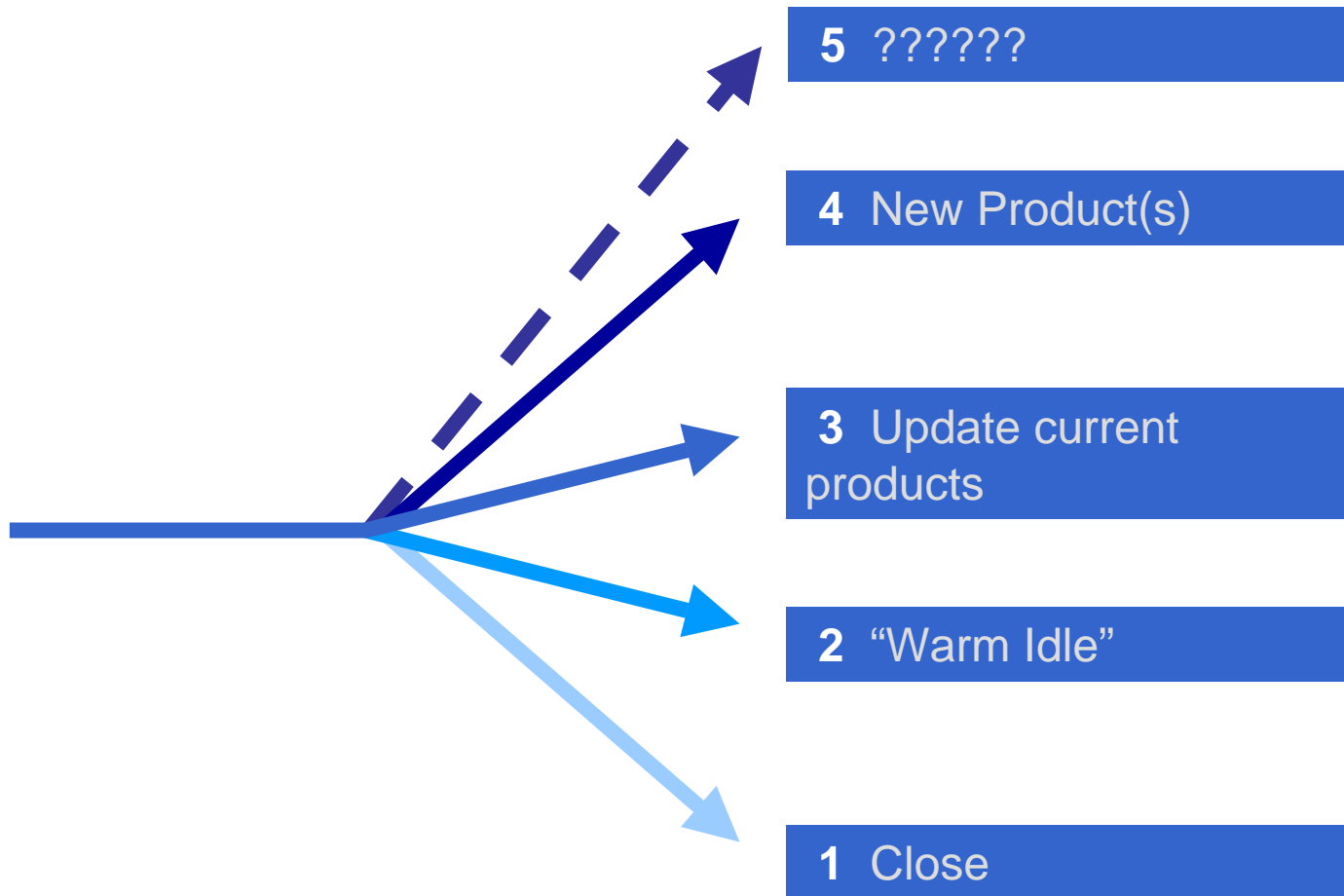




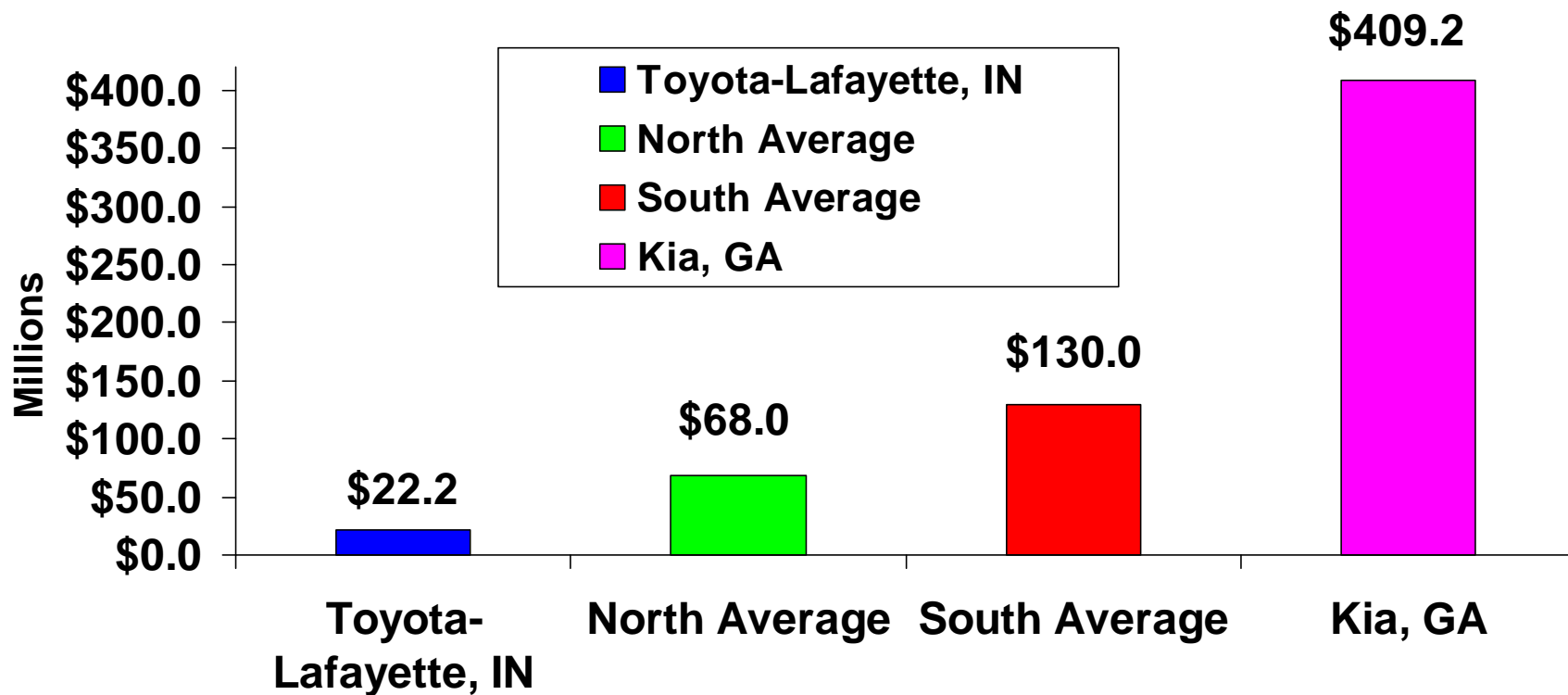
## **ACP Assistance**

- Advise communities and other stakeholders on policies that impact auto renewal
- Share product forecast and opportunity information
- Perform impact and competitiveness research
- Assist in forming automotive action/task force
- Foster collaboration on a common mission

# What Are a Company's Options?



# Average Incentives Compared to Kia and Toyota 2006 Announcements

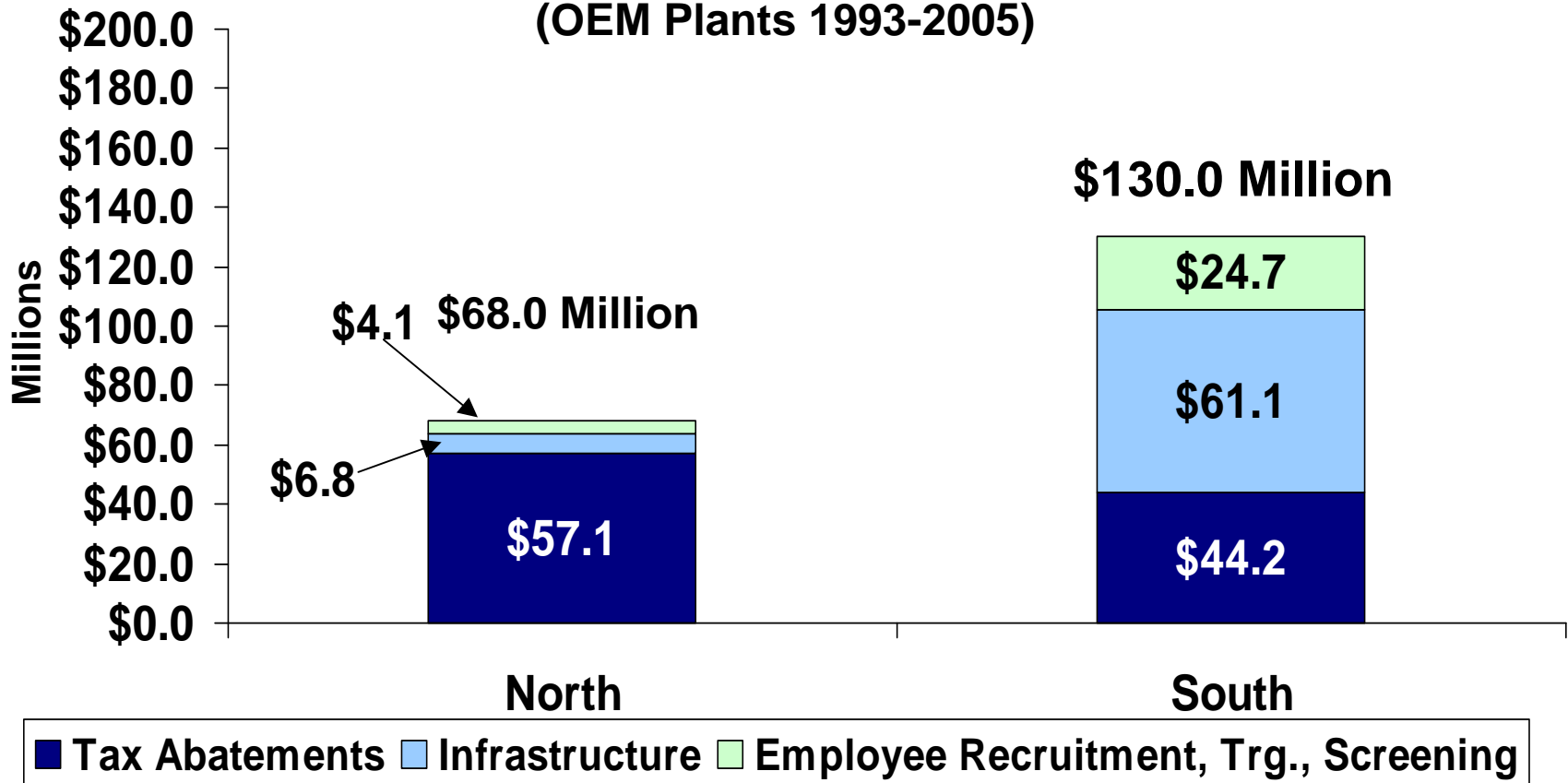


Source: CAR research—Book of Deals

# The Book of Deals

It's Not What it Seems

## Average Incentive Comparison (OEM Plants 1993-2005)

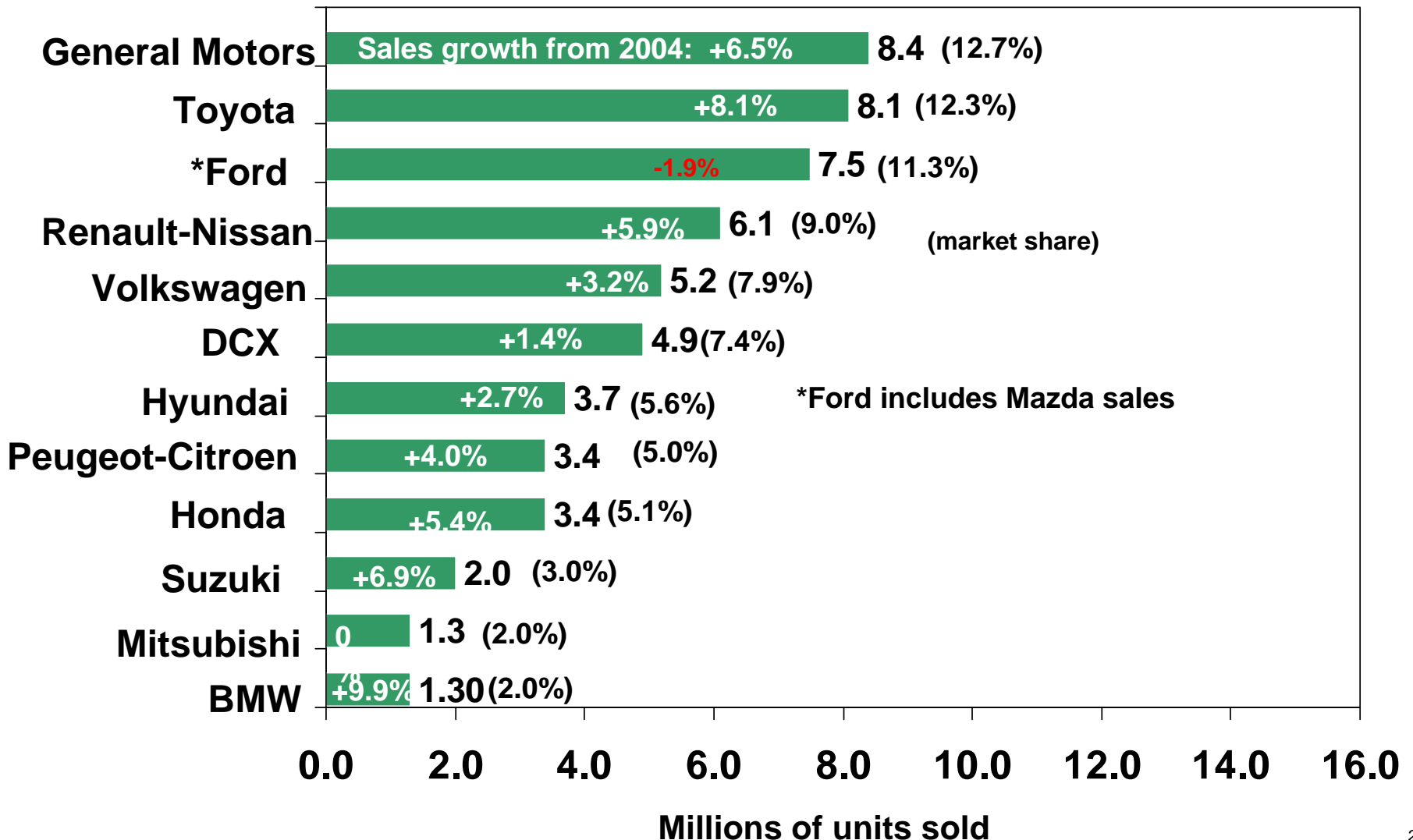


Source: CAR research—Book of Deals

# Toyota Still Plans for 15%

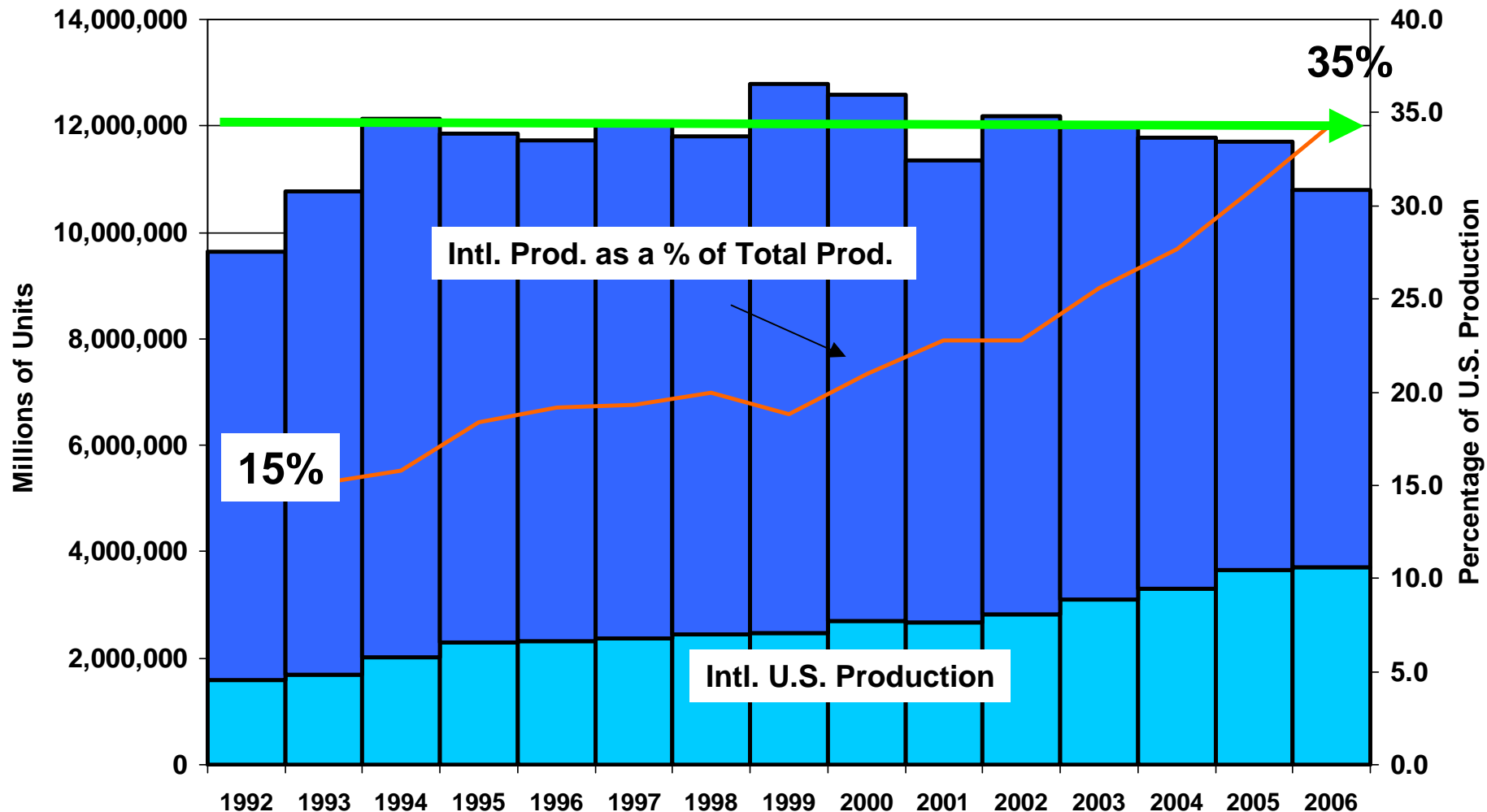
(Will pass GM in 2007)

## 2005 World Motor Vehicle Sales by Company (+3.3%)



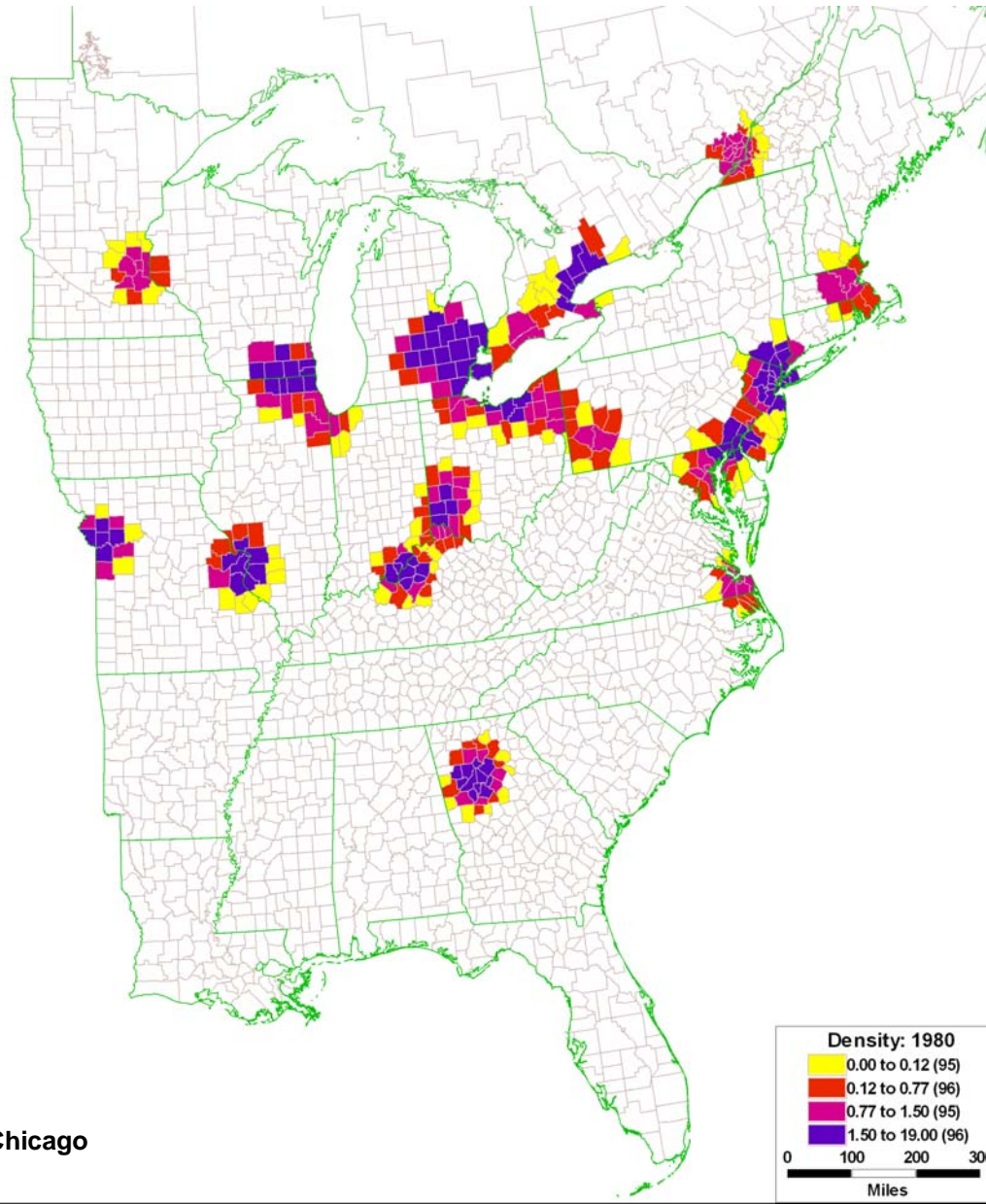
# Not at 12 Million!

## U.S. Light Vehicle Production



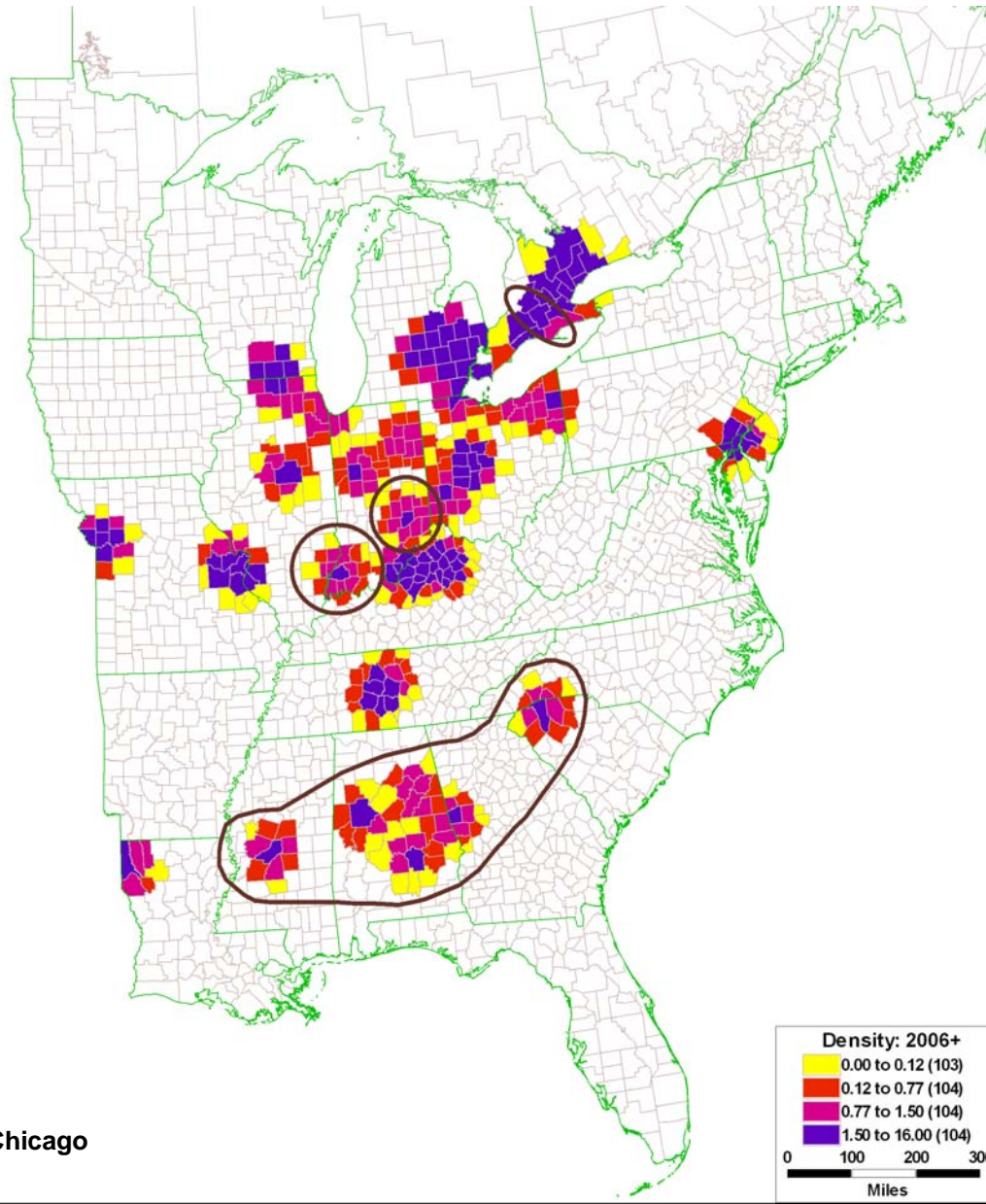
Internationals added 140k a yr. over last 10 years, but 180k a year over last 5 years. Will need to add about 280k a year to replace coming Big cuts in capacity/production.

# Assembly line density in 1980



Source: Federal Reserve of Chicago

# Assembly line density in 2006+



Source: Federal Reserve of Chicago





# International Assembly Facilities in U.S. & Canada

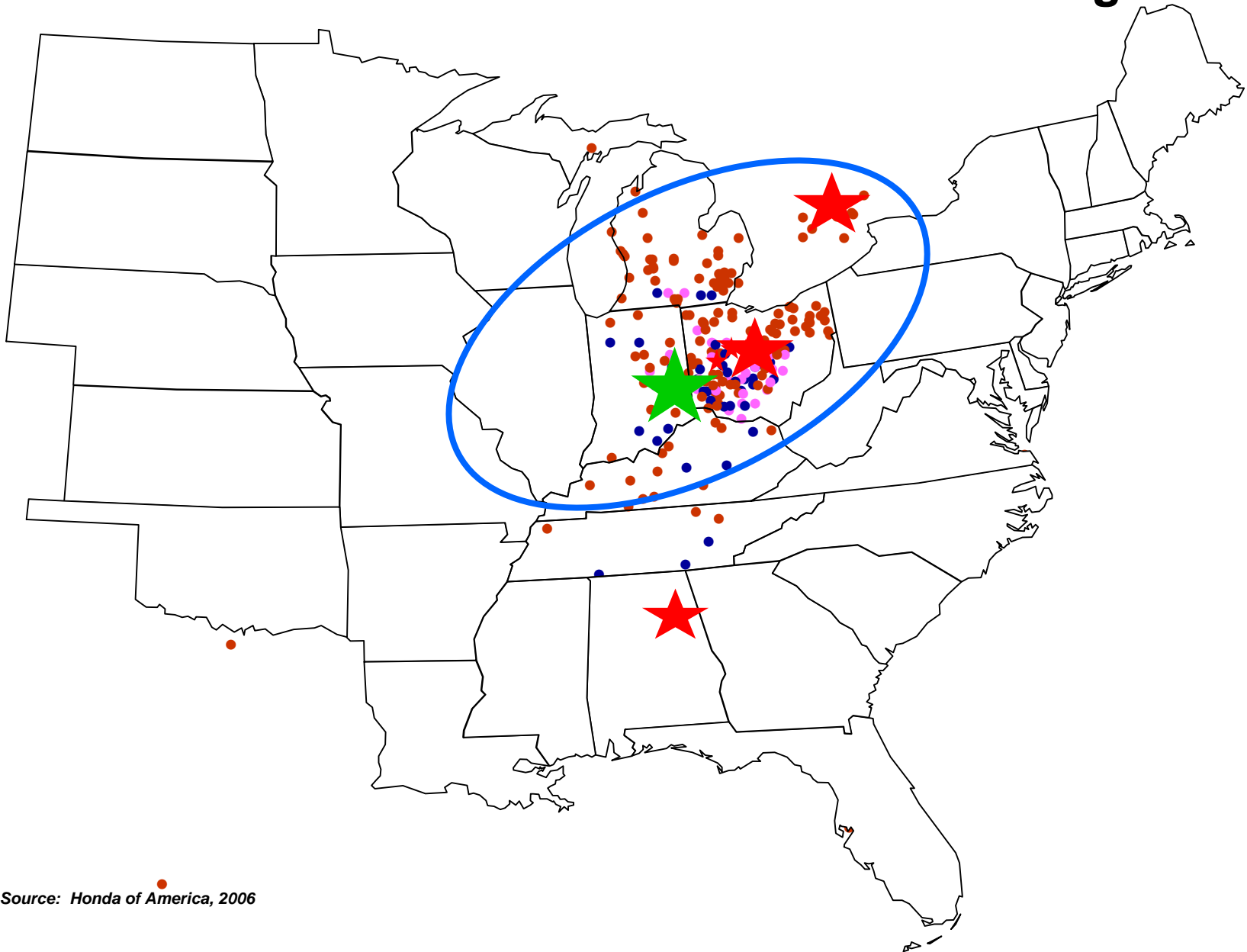
<b>EXISTING</b>	Employment	Investment (Thru June 2006, Millions \$)	Capacity
South	32,634	15,580	2,410,000
North	31,626	15,420	2,742,000
<b>TOTAL</b>	<b>64,260</b>	<b>31,000</b>	<b>5,152,000</b>

<b>FUTURE</b>	Employment	Investment (2006 - 2009, Millions \$)	Capacity
South	4,500	2,050	500,000
North	3,500	1,800	450,000
<b>TOTAL</b>	<b>8,000</b>	<b>3,850</b>	<b>950,000</b>



Source: Automotive News, Harbour Report, CAR Research

# Honda in the Midwest—Minimize Costs and Logistics



Source: Honda of America, 2006

# And They Are Bringing Their Friends...



## US Original Equipment and Aftermarket Parts Market

Year	Size of the U.S. Parts Market \$US Billions	Imports of Parts from Mexico and Canada	Imports of Parts from all Countries Ex. Mexico & Canada	Parts Sourced From U.S. Owned and US Located Suppliers	Parts Sourced From Overseas Owned but US Located Suppliers
1997	\$193.6	11.2%	9.1%	67.7%	12.0%
1998	\$211.0	10.9%	8.8%	65.8%	14.5%
1999	\$242.2	11.1%	8.6%	61.0%	19.3%
2000	\$225.6	12.6%	10.3%	57.0%	20.0%
2001	\$214.2	12.3%	10.3%	56.5%	20.9%
2002	\$218.8	13.5%	10.9%	52.9%	22.7%
2003	\$236.0	13.3%	11.1%	50.6%	24.9%
2004	\$244.0	14.2%	12.3%	46.3%	27.2%
2005	\$238.7	15.5%	14.0%	40.9%	29.6%

**Global “Localization” has seriously hurt traditional US owned and based suppliers**

**Top Employer**

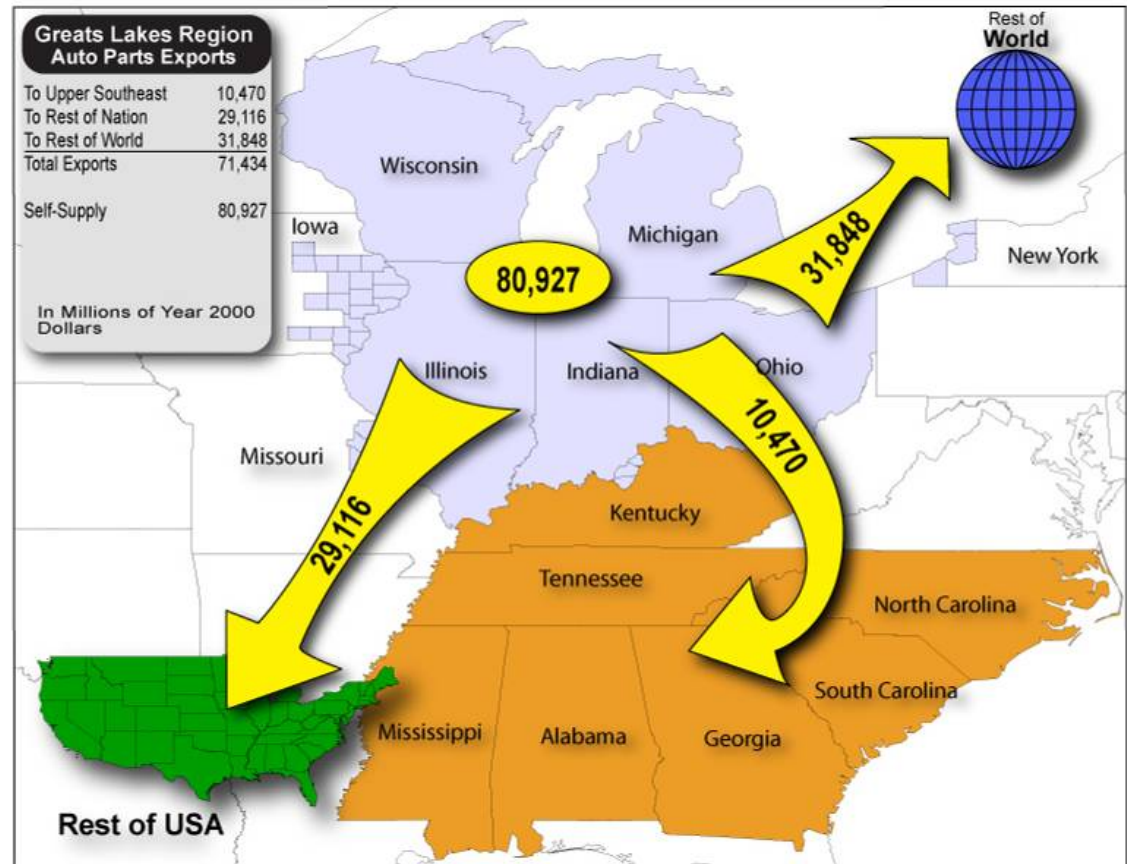
**Top 5 Employer**

State Economy  
for  
sectors



# Manufacturing matters because of its *exports* and its multiplier impacts tied to *local purchasing*

- Build a multi-state, multi-community cooperative to attract and retain investment



## **Motor Vehicle Manufacturing Multiplier of**

**7.5**

**6.5 additional jobs for each job at a  
U.S. Motor Vehicle Firm**

## **Motor Vehicle Parts Supplier Multiplier of**

**5.7 Jobs**

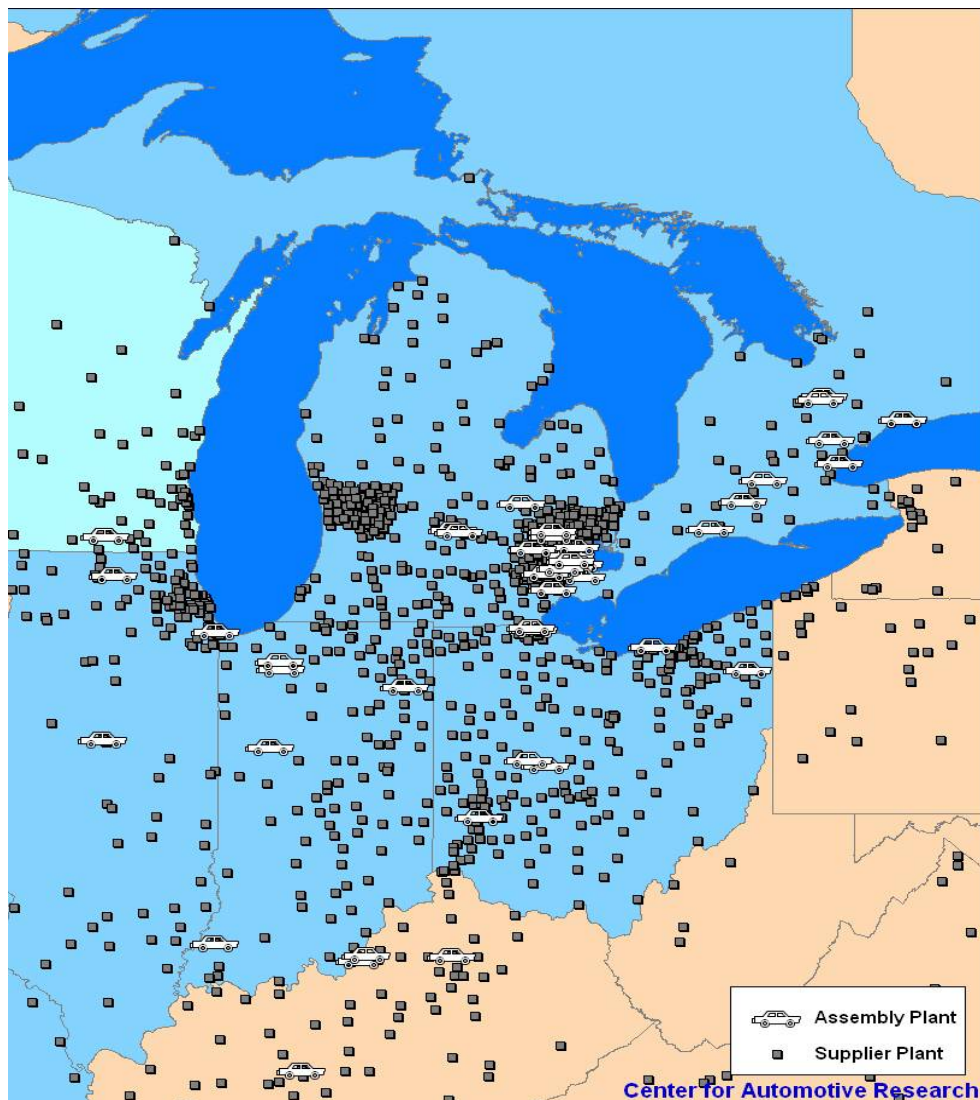
**4.7 additional jobs for every one job  
at a parts making company**

## **What are the fundamental needs of an auto industry?**

- ♦ Exceptional Workforce (present needs)
- ♦ Educational infrastructure (future needs)
- ♦ Integrated supplier network—agglomeration economies
- ♦ Efficient transportation network
- ♦ Research, development and innovation hub

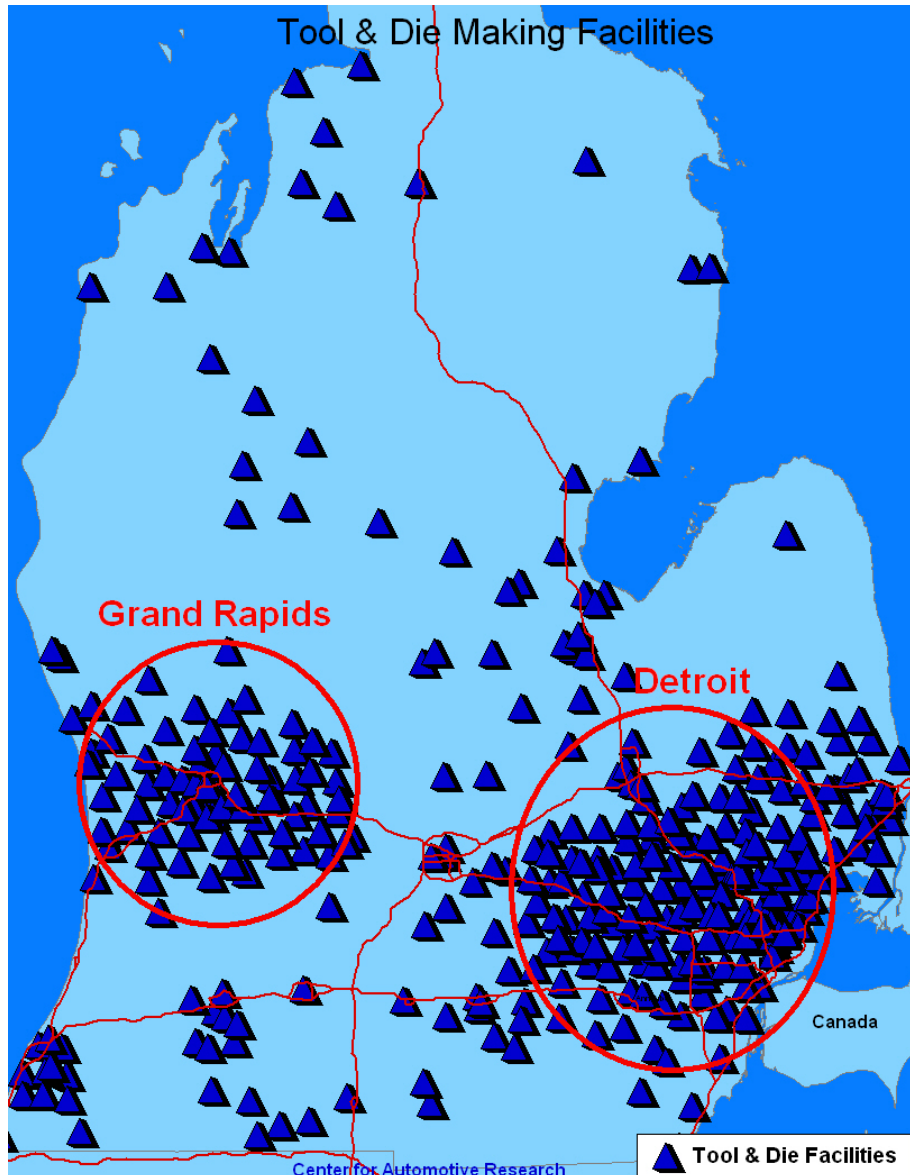


## Exceptional Workforce (present needs) Supplier Agglomeration



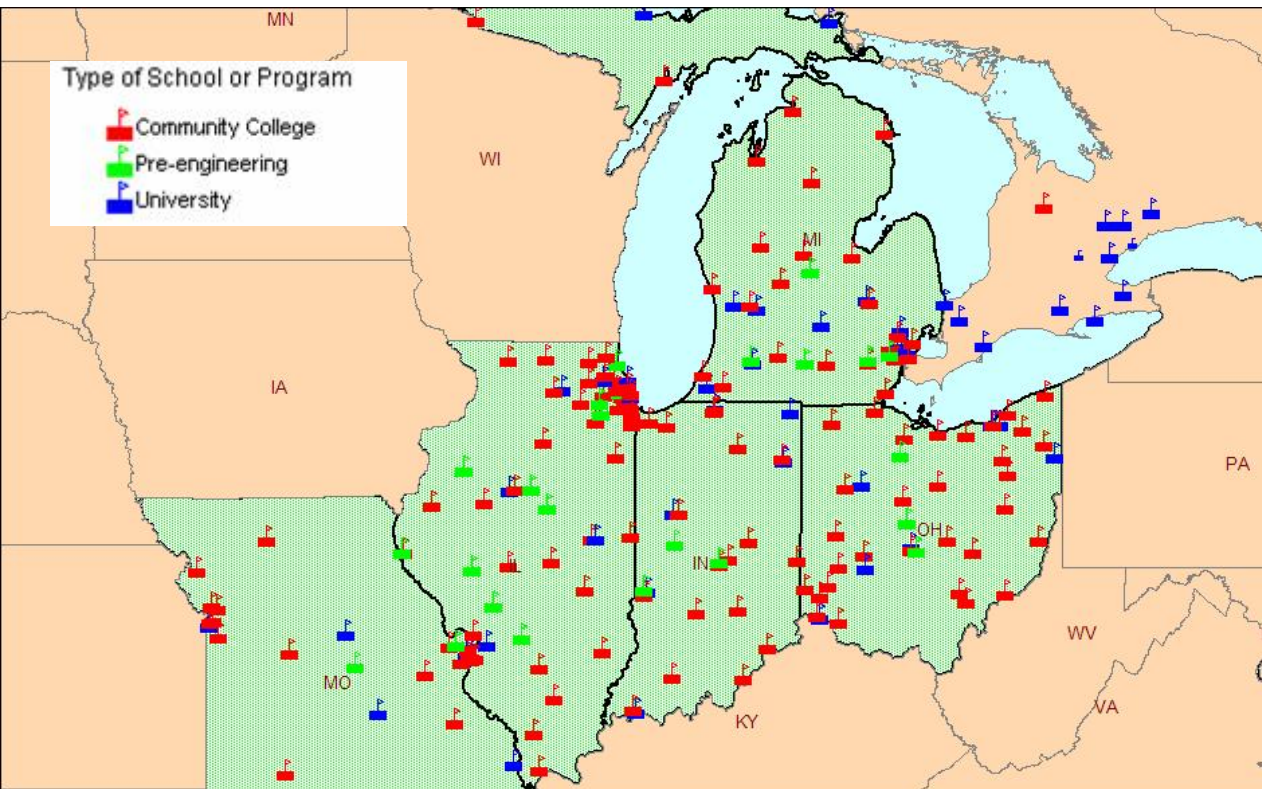
- Region has ample supply of skilled trades, engineering, and management, and even trainable applicants for production.
- Nearly **1 out of every 3** automotive workers in the U.S. are employed in the region
- The region is home to more than **1.5 million skilled trades** workers, one out of every 4 in the U.S.

# Michigan: The Center of the North American Tool & Die Industry



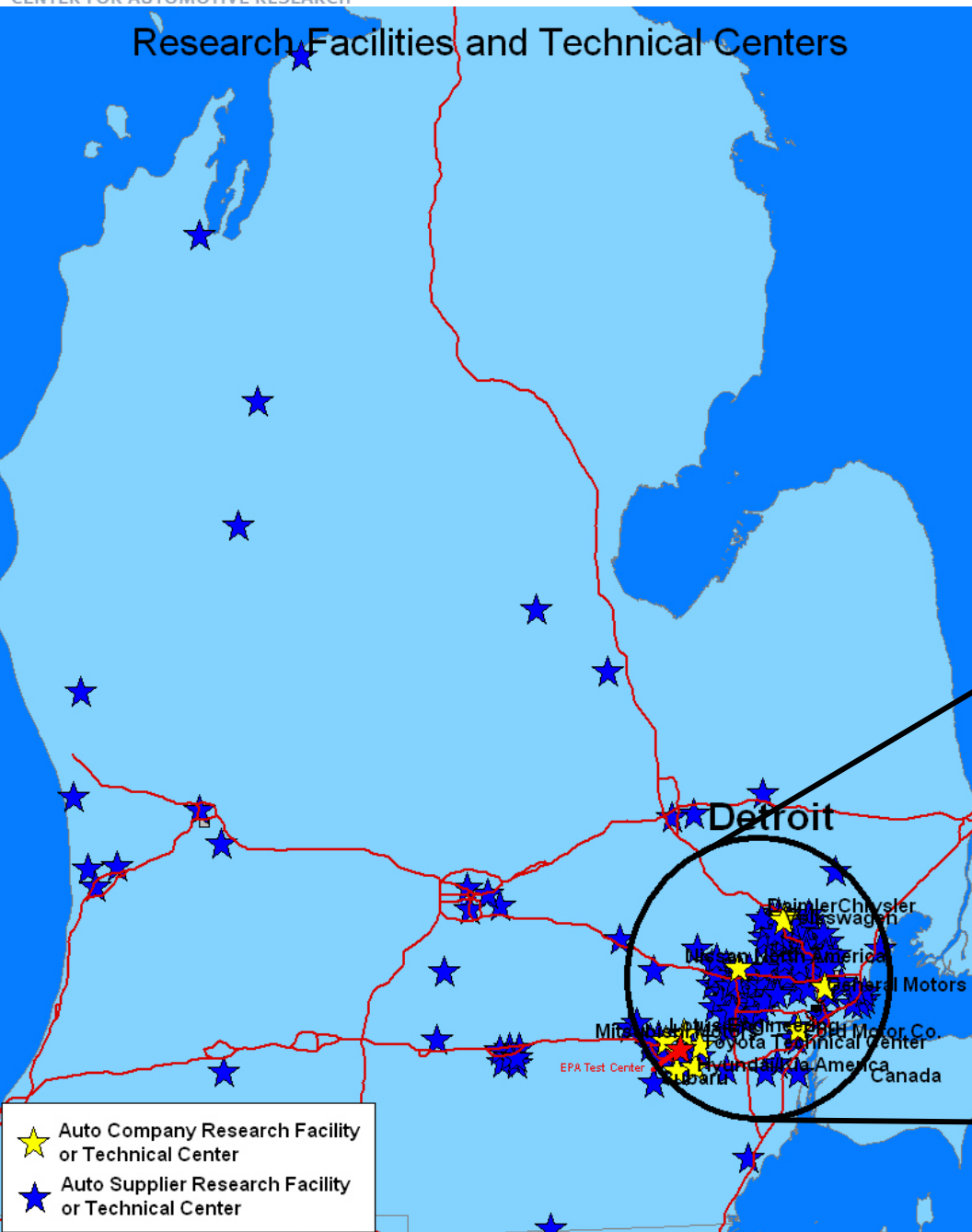
- ♦ 1 out of every 3 Tool & Die Facilities in the U.S. is located Michigan
- ♦ 1 out of every 5 tool & die makers works in Michigan
- ♦ Two Main Tooling Centers
  - Detroit
  - Grand Rapids

# Educational infrastructure (future needs)



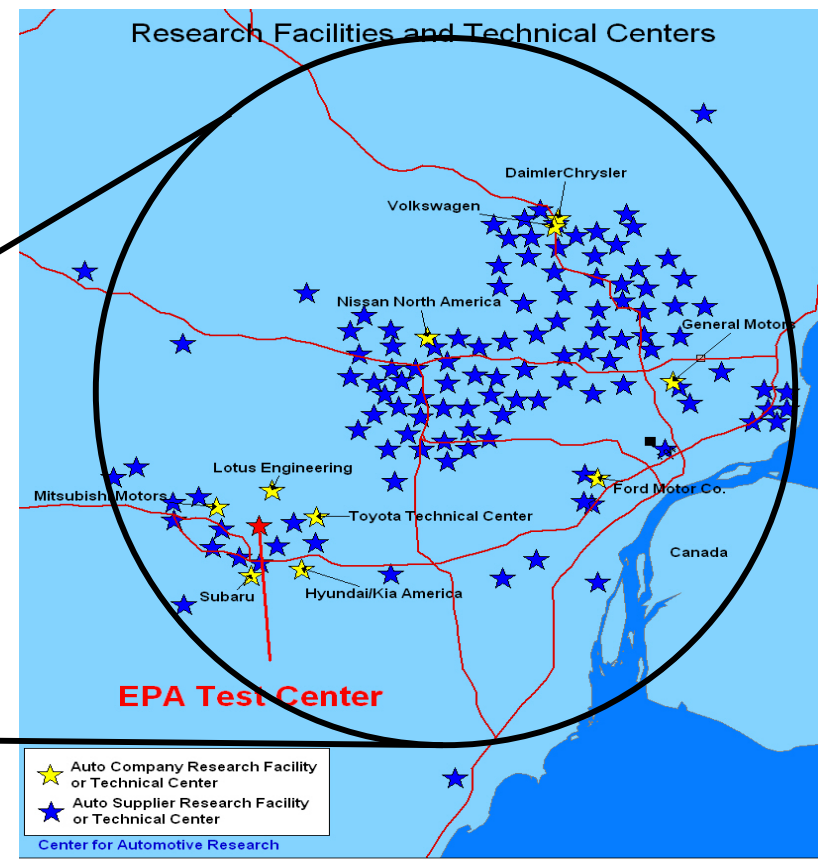
- 77 Four-year Universities with Engineering Programs
- 167 Community and Technical Colleges
- Rapidly developing manufacturing human resource shortages (soon to be the top factor for location)
- Training infrastructure second to none.



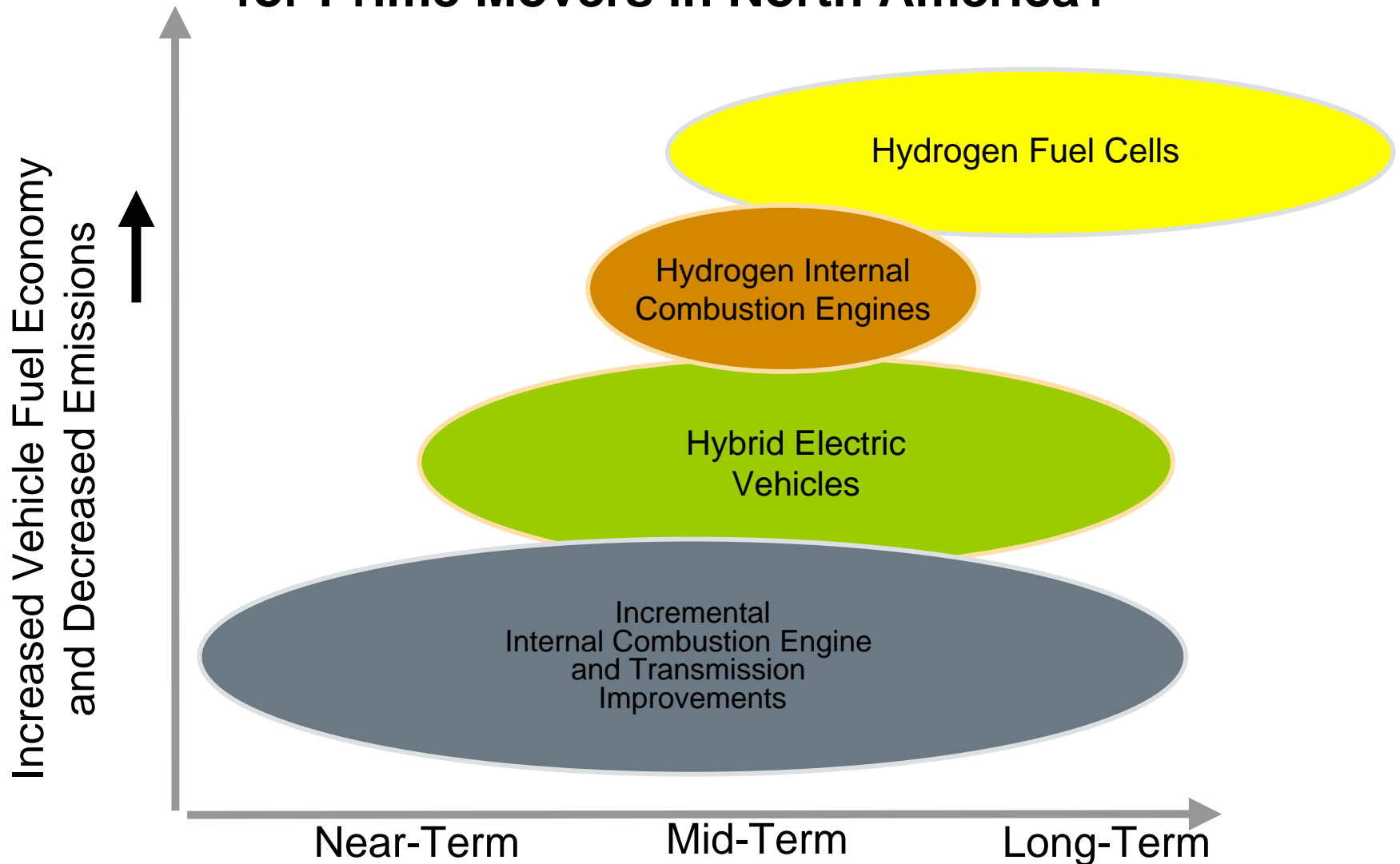


## The research, development and innovation hub IS Michigan

- \$11 billion annual auto R&D spending – 75% of U.S. total
- Over 260 facilities in MI alone



## A Possible Evolutionary Model for Prime Movers in North America?



## Parallel Hybrid System GM DCX BMW (Dual Mode)



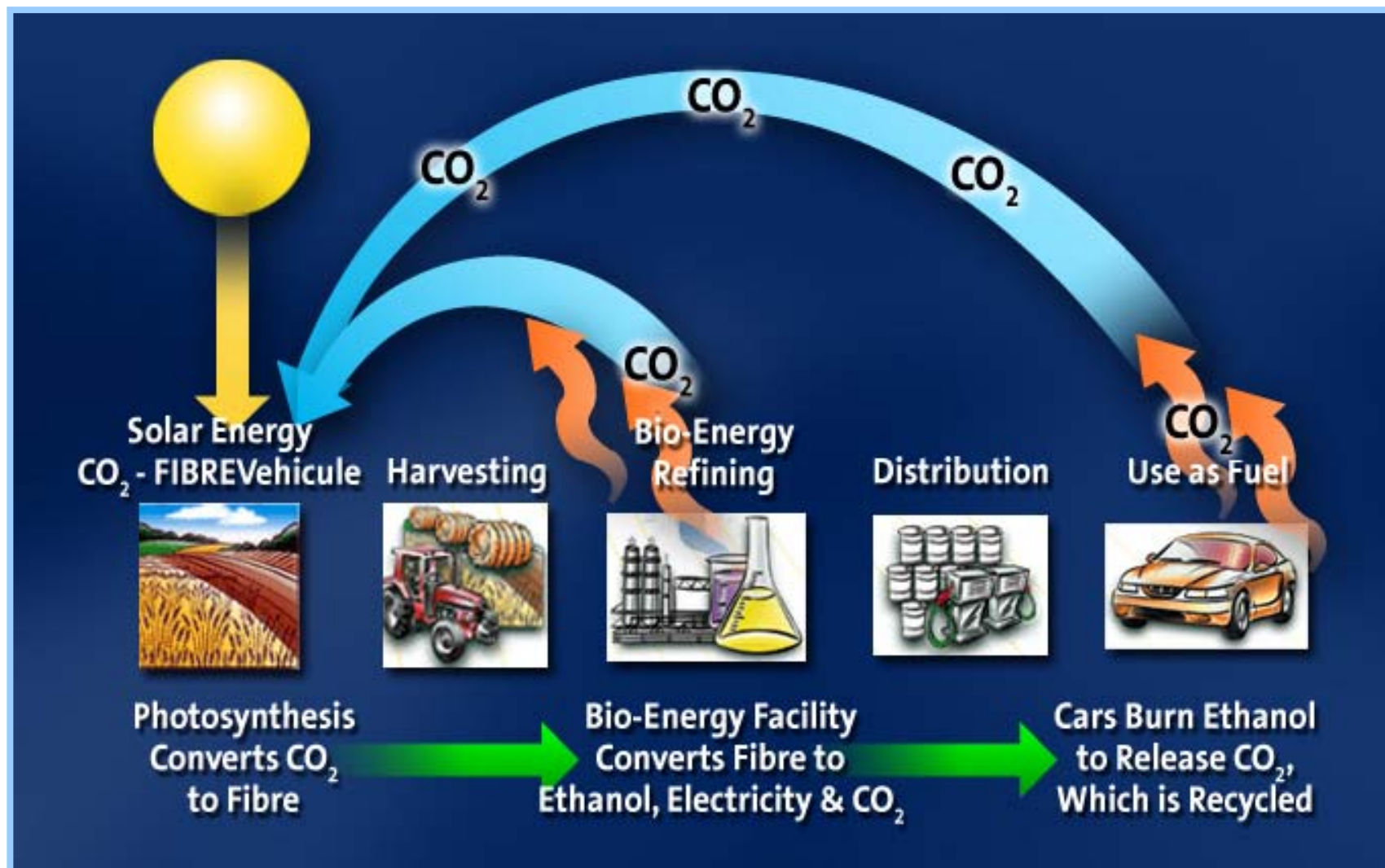
GM, DaimlerChrysler and BMW  
Two-Mode Hybrid Transmission Display

# The Next Frontier

- ♦ Plug-in Hybrid (Proponents say...)
  - A hybrid gets about twice the fuel economy as a conventional car of the same size and capacity
  - A plug-in hybrid will get about 1.5 times the fuel economy of a hybrid
  - A plug-in hybrid, running on biofuel (e.g., 85 percent ethanol) could almost entirely eliminate its use of petroleum
  - Off Peak electrical charging will smooth the grid and just wait till we get wind farms...



# Beyond Corn: Biofuel System





**214<sup>9</sup>/<sub>10</sub>**

**Ethanol**

**236<sup>9</sup>/<sub>10</sub>**

**Regular**  
Gasoline

**249<sup>9</sup>/<sub>10</sub>**

**Super**  
Gasoline

**259<sup>9</sup>/<sub>10</sub>**

**Premium**  
Gasoline

**235<sup>9</sup>/<sub>10</sub>**

**Diesel #2**

**265<sup>9</sup>/<sub>10</sub>**

**Bio-Diesel**

**1.99<sup>9</sup>/<sub>10</sub>**

**Natural Gas**

**168<sup>9</sup>/<sub>10</sub>**

**Propane**

# Market the ACP region to the globe

## Global Automotive Marketing Alliance (GAMA)

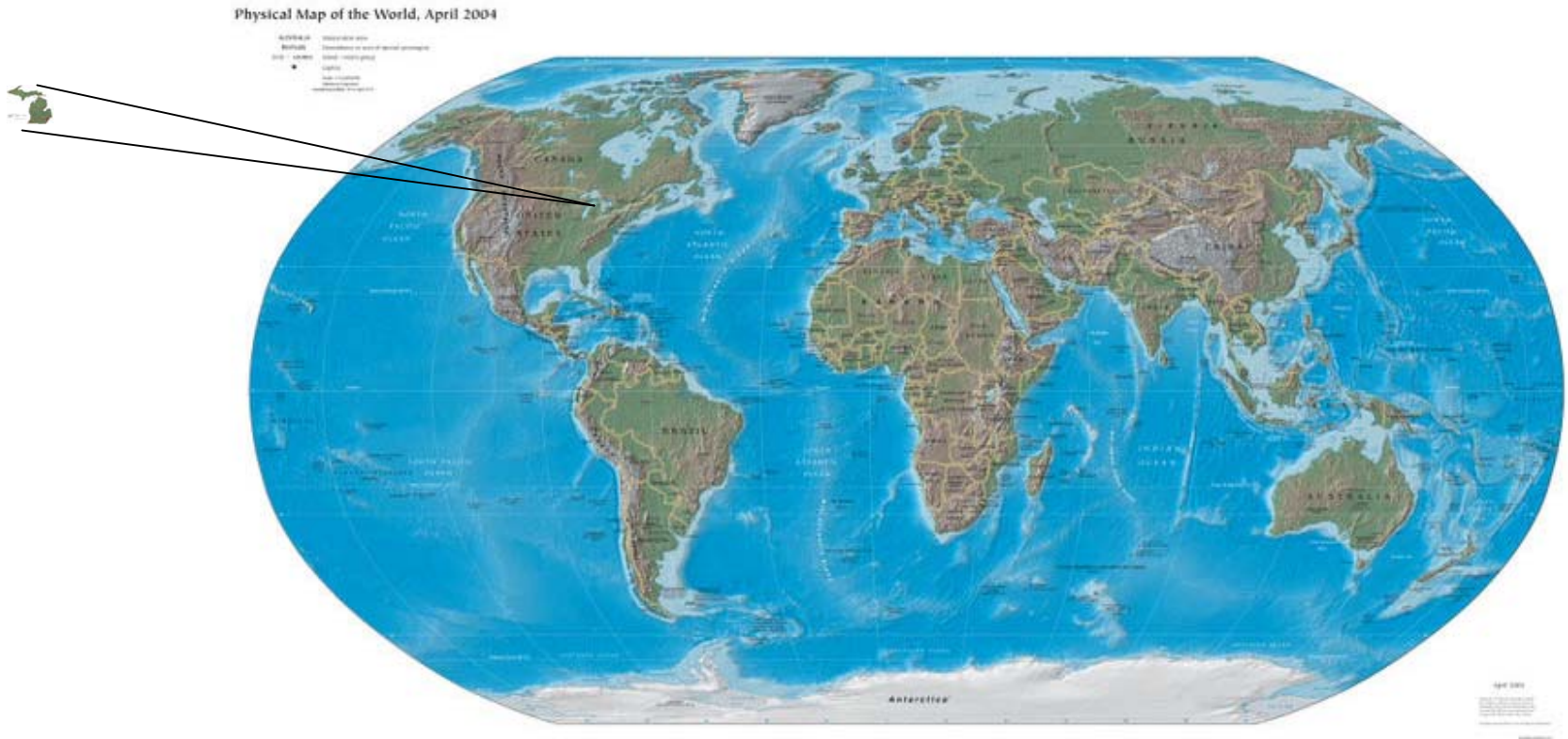
*Goal is to diversify the domestic automotive suppliers' customer base and to break the pattern of reliance on a single automotive regional market*

- ♦ GAMA directly assists groups of small supplier companies and host communities in marketing to global automotive firms and suppliers, both in North America and overseas
- ♦ GAMA organizes international trips (as well as domestic meetings), and facilitates follow-up and relationship-building



<http://www.autoregion.org>

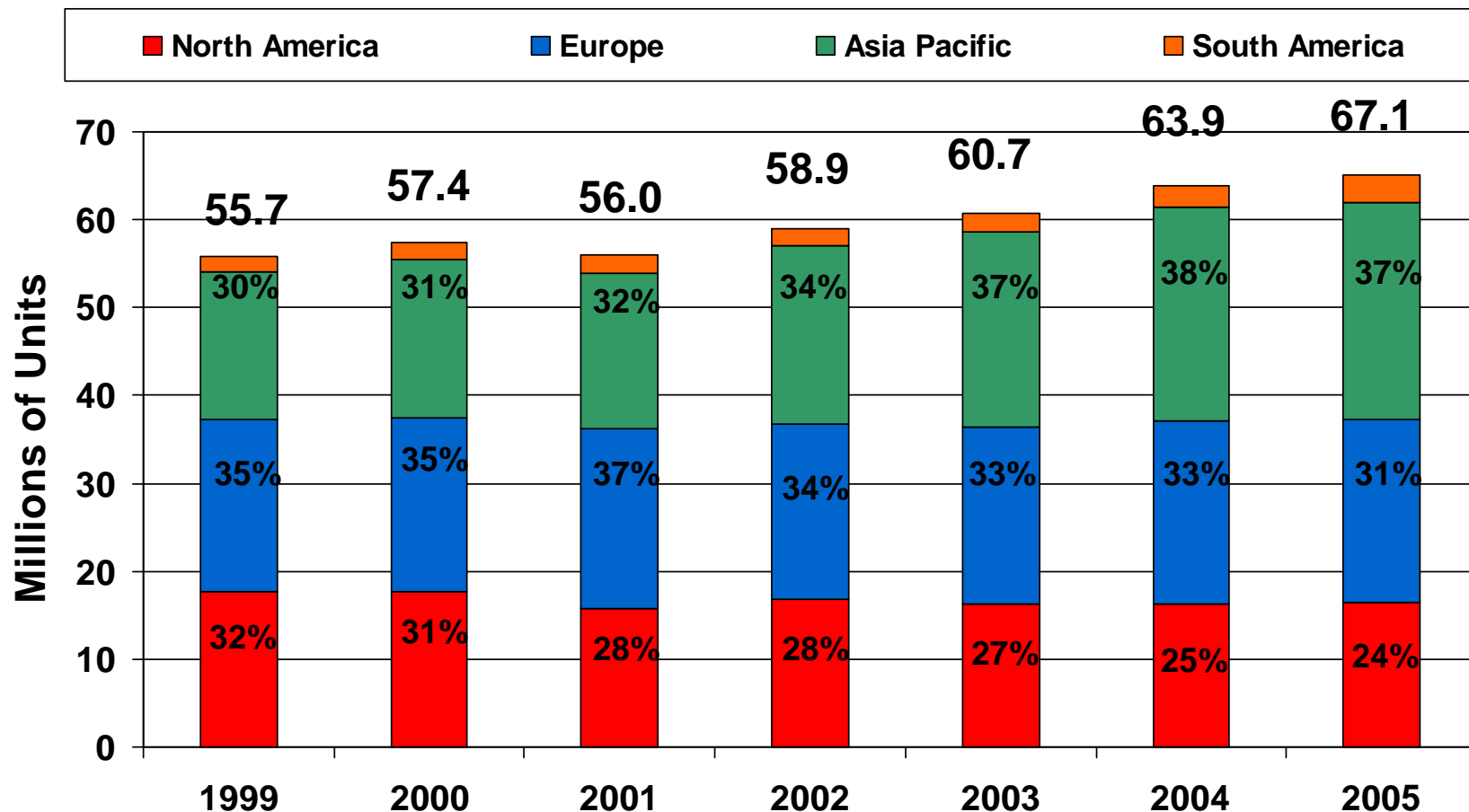
IN FACT, THE WORLD IS VERY BIG.



AND FULL OF OPPORTUNITY . . .

# The Global Auto Industry is in a Long-Term Pattern of Growth and Expansion

Global Automotive Production by Region



# Total Chinese Vehicle Production

1990 - 2006



Sources: Ward's Yearbook 2006, Ward's World Motor Vehicle Data 2005



## Specific Tasks

- ♦ Enlist more communities—double the voice of the region
- ♦ The region needs to sell itself to the global automotive industry of the future
- ♦ Link education/training while addressing future workforce skill needs
- ♦ Attract related industries

# What ACP Provides Community Members

- Automotive industry intelligence
- Access to auto company decision makers
- Tools to use when talking to automotive investors
- Repository of data regarding global auto industry
- Opportunities for communities to target and meet with foreign investors
- A regional focus and an avenue for cooperation and sharing of best practices

# What's It All Mean?

- Big 3 production being replaced (slowly) by new U.S. facilities of international OEM companies
- Productivity improvements mean less jobs, short term,
- But, corresponding reduction in labor cost as percentage of total cost may attract more companies to manufacture in the U.S.
- Automobile industry will be (is) as strong as it has ever been
- Individual communities and states may suffer, while others prosper – why not the ACP region?



# In Conclusion....

- \$18.5 billion major automotive facility investment since late 1990s
- Vast majority of assembly, engine, transmission, and stamping operations in the region
- *We cannot let this 100-year investment fade away*
- *This is what the Midwest does best – better than anywhere else in the world*